BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Laclede Gas Company's	)	
Tariff to Revise Natural Gas	)	
Rate Schedules	)	Case No. GR-99-315

AFFIDAVIT

Kathleen C. McShane, of lawful age, being first duly sworn, deposes and states:

1. My name is Kathleen C. McShane. My business address is 4550 Montgomery Avenue, Suite 350-N, Bethesda, Maryland 20814; and I am Vice President of Foster Associates, Inc.

2. Attached hereto and made part hereof for all purposes is my direct testimony, consisting of pages 1 to 21, inclusive; and Schedules 1 to 17, inclusive; and Appendices A to F, inclusive.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded and the information contained in the attached schedules are true and correct to the best of my knowledge and belief.

Kathleen C. McShane

Subscribed and sworn to before me, the undersigned Notary Public, this 9th day of March, 1999, at Bethesda, Maryland.

Patricia J Bradley

My Commission Expires
10/14/02

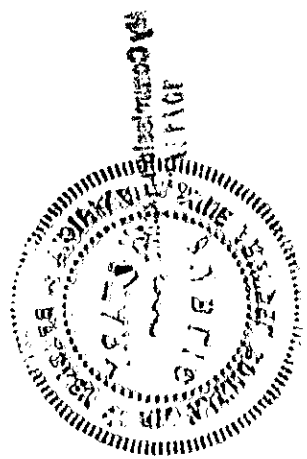

Exhibit No.:	
Issue:	Rate of Return
Witness:	Kathleen C. McShane
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Laclede Gas Company
Case No.:	GR-99-315

LACLEDE GAS COMPANY

GR-99-315

DIRECT TESTIMONY

OF

KATHLEEN C. MCSHANE

INTRODUCTION

Q. Please state your name and business address.

A. My name is Kathleen C. McShane and my business address is 4550 Montgomery Avenue, Suite 350N, Bethesda, Maryland 20814.

Q. What is your occupation?

A. I am a Senior Vice President of Foster Associates, Inc., an economic consulting firm.

Q. What are your educational background and experience?

A. I hold a Masters in Business Administration with a concentration in Finance from the University of Florida (1980) and am a Chartered Financial Analyst (1989). My professional experience is detailed in Appendix A.

Q. What is the purpose of your testimony?

A. I have been asked to render an opinion on the fair rate of return on equity for Laclede Gas, applied to an original cost rate base and, since I am advised that Missouri law requires use of a fair value rate base, a fair rate of return applicable to a fair value rate base.

A. My analysis and conclusions regarding the fair return follow; the statistical support for the studies I have conducted is contained in an Exhibit containing 17 Schedules.

PRINCIPLES AND SUMMARY OF CONCLUSIONS

Q. What standards underpin your determination of the cost of common equity?

A. There are three standards governing the determination of a fair return which have been articulated in landmark court decisions,[1] as well as numerous utility regulatory decisions. These standards call for a regulated firm and its equity investors to be provided the opportunity to earn a return on the value of its property which:

(1) is commensurate with that of comparable risk enterprises;

(2) assures confidence that the firm can maintain its financial integrity; and,

(3) is adequate to attract capital on reasonable terms.

The legal standards reflect the economic criteria encompassed in the "opportunity cost" principle, which holds that the equity investors should be afforded the opportunity to earn a return commensurate with the returns they could achieve on equity investments of similar risk. The opportunity cost principle is consistent with the fundamental premise on which regulation rests, namely that it is intended to act as a surrogate for competition and provide a fair return to investors.

Three methodologies have typically been utilized in the regulatory forum to estimate the return required to meet the standards: comparable earnings, equity risk premium and discounted cash flow tests.

[1] Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia (262 U.S. 679, 1923) and Federal Power Commission v. Hope Natural Gas Company (320 U.S. 391, 1944).

Q. Please summarize the results of your studies using the three tests.

A.

Comparable Earnings Test	13.0-13.25%
Equity Risk Premium Test	11.25%
Discounted Cash Flow Test	13.6%

These results led me to recommend a return of 12.75% for Laclede.

Q. What considerations led you to your recommendation?

A. My recommendation rests on the following considerations:

(1) No single test result should be given exclusive weight; each test provides a different perspective and has its own strengths and weaknesses which vary with both the business cycle and stock market conditions.

(2) Both the equity risk premium and discounted cash flow tests are market related tests for measuring the cost of attracting capital. By contrast, the comparable earnings test, which reflects returns on book equity, addresses the fairness standard set forth by the courts.

(3) With the stock market's meteoric rise over the past several years, the discrepancy between the market and book values of LDCs has been increasingly accentuated, to the point that LDC market/book ratios are now a fraction of that of the market (180% for LDCs versus over 800% for the S&P 500) . The DCF test estimates the return required on the market value of common equity. However, regulatory convention applies that return to the book value. When the market value of the stock is close to its book value, the DCF test result can be directly applied to book value. The further the market value of equity is above

book value, the greater the extent to which an adjusted current DCF cost of equity understates the fair return on book equity. To illustrate, a required return of 10% on equity whose value is 175% of book value is not equivalent to a 10% return on the original cost book value. Assuming a stock price of $17.50, a 10.0% return is equal to an expected cash flow to the equity investor of $1.75; a 10.0% return applied to a book value of $10.00 is only $1.00. Hence, the application of the DCF cost of equity to book value understates the expected return, in dollar terms, by over 40%. Simply put, the application of the market return arising from the DCF test to the book value of equity under current market conditions is **wrong.** Without an adjustment to the DCF cost rates to recognize the significant deviation between current market value and book value, the application of the DCF test will, by definition, significantly understate the return on original cost book value that investors require.

(4) The cost of attracting capital estimates derived from the equity risk premium tests also tend to understate a fair return on book equity for reasons similar to those applicable to the DCF model. Primarily, the understatement lies in the incompatibility of the premise that a market-derived cost is a measure of the fair return when market values exceed book values. However, since (1) the risk premium estimates are, in part, performed independently of the utility market price; and (2) the historic risk premiums may include some compensation for experienced inflation, any market/book adjustment in excess of that required for minimal financial integrity would be judgemental. Nevertheless, because I have limited the adjustment to the risk premium test results to a flotation cost allowance of 6.5%, the result will tend to understate the fair return.

(5) In principle, the comparable earnings test is most compatible with regulation on an original cost book value rate base. Under current

capital market conditions, characterized by high market valuations, it is of paramount importance to give significant weight to the results of the comparable earnings test which, in principle, is most compatible with regulation on an original cost book value rate base.

The above considerations led me to recommend a fair return on equity for Laclede of 12.75%.

PROXY FIRMS FOR ESTIMATION OF THE FAIR RETURN ON EQUITY

Q. To what companies have you applied the three tests you employ to estimate the fair return on equity?

A. For purposes of applying the equity risk premium and discounted cash flow tests, I relied on samples of local distribution company (LDCs) intended to serve as a proxy for Laclede. The cost of equity tests based on the data for a single company are likely to produce less reliable results than tests based on a representative sample of companies of similar risk.

Q. How did you select the samples of LDCs?

A. I started with all companies classified by *Value Line* as a natural gas distributor and then selected only those that met the following criteria:

- 1997 net revenues above $100 million
- At least 85% of 1997 year-end net assets devoted to natural gas distribution operations.

Application of these criteria yielded a sample of 17 LDCs, excluding Laclede. Schedule 1 lists those LDCs, their 1997 net revenues and percentage of net assets devoted to natural gas distribution operations. This sample was used in the application of the Capital Asset Pricing Model.

For the application of the discounted cash flow test and a discounted cash flow-based equity risk premium test, I relied on a sample of 13 LDCs. The smaller sample excludes from the group of 17 those LDCs which have fewer than three analysts' long-term earnings forecasts available from the IBES International, Inc.

I also relied on a sample of low risk consumer-oriented industrials selected to be of approximately similar investment risk to LDCs for purposes of applying the comparable earnings test. The sample selection process and the list of companies in the resulting sample are found in Appendix B.

OVERVIEW OF LACLEDE'S BUSINESS AND FINANCIAL RISKS

Q. Please briefly describe the business risk environment in which Laclede operates.

A. Laclede serves the city of St. Louis, surrounding counties, and several counties in southeastern Missouri. Its market is dominated by temperature-sensitive customers (close to 90% of net revenues). The nature of the customer base exposes the company's earnings to the vagaries of weather, since Laclede operates without any form of weather normalization mechanism. Warmer than normal weather can have a significant impact on earnings, as illustrated by the approximately 15% decline in earnings per share in 1998, and the approximately $23 million in forgone earnings over the past decade and a half due to this factor.

Laclede also faces low growth prospects relative to its peers due to the high level of market saturation (heating saturation of close to 95%). Laclede's expected customer growth rate of approximately 1% is half that of its peers. Lower growth prospects tend to reduce the attractiveness of the stock relative to peers with significant growth opportunities.

Low growth in conjunction with the changes in demographics within the service area — *i.e., migration from urban to suburban areas — increases the unit fixed*

costs that must be recovered from the customer base. Customer migration within the existing service area entails new facilities whose cost must be recovered along with the cost of facilities that were already constructed for use by the same customers. In the current environment, characterized by rising competition among energy sources, the lack of increased load to bear the greater distribution system costs creates increasing competitive pressure for Laclede.

In the area of gas supply, the most significant risk lies in the Company's ability to recover the costs of gas and pipeline transportation. The Company's Purchased Gas Adjustment Clause (PGA) currently provides for pass-through of prudently incurred gas costs to customers. My return recommendation is premised on continuation of the PGA. Although the legality of the PGA clause has been upheld, it is my understanding that the Commission Staff has recommended that the Commission consider eliminating it in future cases. Since gas costs comprise over 50% of revenues, exposure of the shareholders to gas price risks would significantly increase the investor's required return.

The regulatory environment is, from the investor's perspective, a key factor in assessing risk. Regulators have considerable flexibility to either mitigate or increase shareholder risk through the regulatory framework (e.g., rate design, type of test year). Laclede operates with a historic test year, which puts significant pressure on margins, even with only moderate inflation. Standard & Poor's notes that the key challenge for Laclede is "uncertainty about rate relief." (*Global Sector Review*, November 1998).

The regulator also plays a key role in the increasingly competitive market. It is the regulator who sets the ground rules governing the utilities' participation in competitive markets. Utilities face operating restrictions, reporting requirements, transfer pricing and cost allocation rules that do not apply to alternative energy suppliers. While these rules are intended to enhance competition by limiting market power, they limit the utilities' ability to compete effectively in growing unregulated markets.

Q. How do you view Laclede's business risk relative to its peers?

A. Laclede is of average business risk, a conclusion that was also expressed by Standard & Poor's in its most recent debt rating report.

Q. What is Laclede's financial risk position?

A. Laclede's debt ratings are as follows:

Standard & Poors	AA-
Moody's	AA3
Fitch	A+

Standard & Poor's guidelines for an AA rating for a gas distributor of average business risk, along with Laclede's 1996-1998 values are as follows:

	S&P Guidelines	Laclede
Funds from Operations to Total Debt	33%	23%
Funds from Operations Interest Coverage	4.75 x	4.0 x
Pre-tax interest coverage	4.25 x	3.5 x
Total Debt to Total Capital	41%	50.5%
Net Cash Flow to Capital Spending	115%	82%

As the ratios above indicate, Laclede's recent financial parameters have been weak relative to each of the guidelines.

In comparison to its peers, Laclede's total debt ratio, at year end 1998, was slightly lower than the average of the sample of 17 LDCs (50.1% vs. 53.5%; see Schedule 2); its pre-tax interest coverage ratios have been marginally higher (3.3 times for the five year period 1994-1998 versus 3.2 times for the LDC sample;

see Schedule 5). On balance, there is no significant difference in financial risk between Laclede and its peers.

Q. What is the capital structure Laclede proposes to use for ratemaking purposes?

A. Laclede proposes to use its 12/31/98 capital structure, adjusted for expected issues of common equity and long-term debt and for the annual average level of short-term debt. The ratios are as follows:

Debt	43.6%
Preferred Stock	0.4
Common Equity	56.0

The proposed capital structure reflects a debt ratio that is slightly higher than the S&P 41% total debt/total capital guideline for an AA rating for an average business risk LDC. The proposed ratios are within the range of those maintained by Laclede's peers (Schedule 2).

FAIR RETURN ON COMMON EQUITY

Q. Please discuss the application of the three tests you have used to determine a fair return on equity for Laclede.

A. The sections below summarize the conceptual underpinnings, the specific techniques that were used, and the results of each of the three tests.

THE COMPARABLE EARNINGS TEST[1]

Q. Please discuss the conceptual underpinnings of the comparable earnings test.

[1]Detailed discussion in Appendix B.

A. The comparable earnings test provides a measure of the fair return based on the concept of opportunity cost. Specifically, the test arises from the premise that capital should not be committed to a venture unless it can earn a return commensurate with that available prospectively in alternative ventures of comparable risk. Since regulation is intended to be a surrogate for competition, the opportunity cost principle entails permitting utilities the opportunity to earn a return commensurate with the levels achievable by competitive firms of similar risk. The comparable earnings test, which measures returns, in relation to book value, is, the only test that can be directly applied to the equity component of an original cost rate base without an adjustment to correct for the discrepancy between book values and current market values.

The concept that regulation is a surrogate for competition implies that the regulatory application of a fair return to an original cost rate base should result in a value to investors commensurate with that of similar risk competitive ventures. The fact that a return is applied to an original cost rate base does not mean that the original cost of the assets is the appropriate measure of their fair market value. The comparable earnings standard, as well as the principle of fairness, suggests that, if competitive industrial firms of similar risk are able to maintain the value of their assets considerably above book value, the return allowed to utilities should likewise not foreclose them from maintaining the value of their assets as reflected in current stock prices.

Q. Please summarize your application of the comparable earnings test.

A. The application of the comparable earnings test began with the selection of a sample of industrials of reasonably comparable risk to LDCs.

The returns for the sample of the 35 industrials were measured over the most recent business cycle measured from 1989-1997. Since these returns were achieved over a period during which the average rate of inflation and economic growth can be reasonably assumed to be representative of future economic

conditions, the measured earnings are a good proxy for future earnings. The returns for the sample were as follows:

Average	Median	Average of Annual Medians
16.1%	16.2%	16.6%

The results indicate that a low risk industrial may be expected to earn a return of approximately 16.0-16.5%.

Since the industrials are of somewhat higher risk than LDCs, as measured by the betas, the earnings were adjusted for differences in relative betas to arrive at a fair return on book equity for Laclede. The risk-adjusted return lies in the range of 12.9-13.25%, indicating a fair return in the range of approximately 13.0-13.25%.

Q. What does the 13.0-13.25% return represent?

A. These values represent the fair return percentage which should be applied to the equity portion of Laclede's original cost rate base. It will provide Laclede's equity investors the opportunity to earn a return commensurate with that achievable by competitive firms of similar risk.

EQUITY RISK PREMIUM TEST[1]

Q. What is the underlying premise of the equity risk premium test?

[1]Detailed discussion in Appendix C.

A. The risk premium test is derived from the basic concept of finance that there is a direct relationship between the level of risk assumed and the return required. Since an investor in common equity takes greater risk than an investor in bonds, the former requires a premium above bond yields in compensation for the greater risk. The risk premium test is a measure of the market-related cost of attracting capital, i.e., a return on the market value of the common stock, not the book value.

Q. How did you apply the equity risk premium test?

A. I used two basic approaches: the Capital Asset Pricing Model (CAPM) and direct estimates of LDC risk premiums by reference to both historic achieved risk premiums and forward-looking risk premium estimates.

Q. How is the CAPM applied?

A. The Capital Asset Pricing Model first requires an estimate of the equity risk premium required by the market as a whole in relation to the yield on long Treasury bonds. That premium is then adjusted for the relative risk of the company or industry being analyzed. The resulting risk premium is then added to the forecast of long Treasury bonds.

Q. How did you estimate the market risk premium?

A. I estimated the market risk premium in two ways: (1) by reference to achieved historic risk premiums; and (2) by reference to a forward looking estimate of the market risk premium.

The achieved market risk premiums have been in the range of 7.5-8.25%.

The forward market risk premium was estimated by calculating a series of quarterly estimates of the cost of equity for the market (proxied by the Standard

& Poor's 500) and then subtracting from them the corresponding yield on long Treasury bonds. A correlation analysis between the resulting bond yields and risk premiums was conducted, which showed that at a forecast Treasury bond yield of 5.25%, the resulting market risk premium is 9.8%.

Hence, the two methods for estimating the market risk premium indicate an equity risk premium in the range of 7.5-9.5%, or a mid-point of 8.5%.

To adjust the 8.5%t market risk premium for the risk of Laclede relative to the market as a whole, I used the average *Value Line* beta for the sample of 17 LDCs. That average (December 1998) is 0.59. Applying the 0.59 beta to a market equity risk premium of 8.5% results in a risk premium applicable to Laclede of 5.0%.

Q. What is the LDC risk premium estimated directly from historic risk premiums achieved by gas distributors?

A. The second equity risk premium approach to estimating the required equity return for Laclede involves measuring the historic achieved risk premiums for the industry (using the Moody's Gas Distribution Index) relative to returns on long Treasury bonds. The historic premiums then serve as a proxy for the future required risk premium. The average historic risk premium was approximately 6.5%.

Q. What is the forward-looking risk premium estimated for LDCs?

A. The forward looking equity risk premium for LDCs can be estimated from a monthly series of differences between DCF estimates for LDCs and the corresponding long Treasury bond yield. A correlation analysis between the risk premium and long Treasury bond yields indicates a forward looking premium of 4.9%.

Q. What does the equity risk premium analysis indicate?

A. The three approaches indicate an LDC equity risk premium of approximately 5.0-6.5% at a forecast long Treasury yield of 5.25%. The mid-point of the range is approximately 5.5%.

Based on the mid-point equity risk premium of 5.5%, the cost of equity is 10.75%.

Q. What does the 10.75% result represent?

A. The 10.75% cost determined by reference to the equity risk premium test is a market-derived cost. That cost rate need to be adjusted, at a minimum, for flotation costs to permit the utility to recover all costs associated with equity financing and to be in a position to raise equity capital without dilution of book value. A minimum flotation cost allowance is 50 basis points.[1]

Addition of a flotation cost allowance of 50 basis points results in a return on equity of 11.25%.

As previously noted, the risk premium test results, given that they are derived from market data, will tend to understate the fair return when applied to an original cost book value.

DISCOUNTED CASH FLOW TEST[2]

Q. Please summarize the basis for the discounted cash flow test.

[1]See Appendix E for discussion of flotation costs.

[2]A detailed discussion of the application of the DCF test is contained in Appendix D.

A. The discounted cash flow (DCF) test is based on the proposition that the price of a common stock is equal to the present value of future cash flows to the investor. If the price of the stock can be observed, the current cash flow (i.e., the dividend is known), and the growth in cash flows can be enforced, the investor's required return on equity can be derived.

Q. Please describe the DCF model you have used.

A. I have used the constant growth model, which is expressed as follows:

$$\text{Cost of Equity (k)} = \frac{D_0(1+g)}{P_0} + g$$

In words, the cost of equity is equal to the dividend yield plus the expected constant growth rate. The dividend yield component is equivalent to the next expected dividend divided by the recent price.

Q. What growth rates did you rely on to estimate investor expectations?

A. I relied on analysts' consensus forecasts of normalized earnings growth published monthly by IBES International, Inc. Consensus analysts' growth expectations have become virtually a standard input to DCF models. In the longer run, earnings, dividends, book value and stock price should grow in tandem; hence, long-term earnings growth expectations are a proxy for dividend growth.

Q. To what companies did you apply the DCF model?

A. I applied the model to a sample of 13 LDCs, which comprises those LDCs for which there are three or more IBES analyst forecasts.

Q. *Did you apply the DCF model to Laclede itself?*

A. No, I did not apply the model directly to Laclede, nor did I include Laclede in the proxy LDC sample. Any DCF estimate which relies only on data for a single company is not only subject to measurement errors, but entails considerable circularity. For a utility, the growth component of the DCF cost is integrally linked to the allowed ROE. As noted in *Regulatory Finance: Utilities' Cost of Capital* by Dr. Roger Morin (Arlington, Va: Public Utilities Reports, 1994),

> "To estimate what ROE resides in the minds of investors is equivalent to estimating the market's assessment of the outcome of regulatory hearings. Expected ROE is exactly what regulatory commissions set in determining an allowed rate of return. If the ROE input required by the model differs from the recommended return on equity, a fundamental contradiction in logic follows. In other words, the method requires an estimate of return on equity before it can even be implemented. Common sense would dictate the inconsistency of a return on equity recommendation that is different than the expected ROE that the method assumes the utility will earn forever. For example, using an expected return on equity ROE of 13% to determine the growth rate and using the growth rate to recommend a return on equity of 11.5% is inconsistent. It is not reasonable to assume that this company is expected to earn 13% forever, but recommend an 11.5% return on equity. The only way this utility can earn 13% is that rates be set by the regulator so that the utility will in fact earn 13%." (page 161)

Q. Please summarize the results of your application of the DCF model.

A. The average and median IBES long-term earnings growth expectations are 5.7% and 5.5% respectively (January 1999). The dividend yields (current dividend/average price for the three months ending January 1999) were 4.5% (average) and 4.7% (median).

The dividend yield needs to be adjusted to be compatible with the constant growth model. The dividend yield component of the model

$$\frac{D_0 (1+g)}{P_0}$$

requires that the current dividend yield be raised by the long-term growth expectation. This adjustment results in dividend yield components of 4.8% and 5.0%.

Q. What is the cost of equity suggested by the constant growth model?

A. Adding the longer-term growth expectation to the dividend yield results in a DCF cost of 10.5%.

Q. What does the 10.5% DCF cost represent?

A. It represents the return investors expect to earn on the current market value of their investments in LDC common equities. It does not equate to the return that investors expect LDCs to earn on the book value of their common equity. In fact, *Value Line*, which publishes quarterly its projections of LDC ROEs, anticipates that the average ROE for 13 LDCs over the period 2001-2003 for the 13 LDCs will be 13.1% (Schedule 15).

Q. Isn't there a "disconnect" in logic if one expects the allowed return on equity to be set at the DCF cost of equity?

A. Yes. The return that investors anticipate is a dollar return. A 10.5% market return on an investment which is trading at 175% of book value — close to the average 1998 market/book ratio of the sample of LDCs — is not equal to a 10.5% return on book value. Simplistically, if the stock price is $17.50, an expected return of 10.5% is equal to $1.84 ($17.50 x 10.5%); if the book value is $10.00, a 10.5% return only equates to a return of $1.05. Application of the 10.5% to book value would cause the market price to decline to book value, so that investors experience a capital loss of close to 45%. The idea that investors are willing to pay a price equal to $17.50 of book value in order to see the market value of their investment drop by 45% defies common sense.

Q. Should the regulator discard use of the DCF test under today's market conditions?

A. Not as long as appropriate adjustments are made. It is always incumbent upon the regulator to examine the underlying premises of the tests which are used to estimate a fair return and to determine if the test is valid under the particular capital market conditions which prevail.

The appeal of the discounted cash flow test as a measure of the fair return lies in the relative simplicity of its application. As a measure of the fair return, however, in a regulatory framework that relies on original cost book value as the base to which the return is applied, the DCF test has severe limitations. The investor's required return as measured by the DCF test (derived directly from the current market price) and the expected return on book value will only converge when the market value is close to book value. In today's capital market environment, that premise does not hold.[1]

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[1]Other regulatory jurisdictions are recognizing problems with sole reliance on the DCF. To illustrate,

"We have indicated our own concerns with heavy reliance on the DCF model, as expressed in *Indiana Mich. Power Co.*, Cause No. 38728, 116 PUR4th 1, 17-18 (IURC; 8/24/90):

(continued...)

Q. Is there a method which permits the DCF cost estimates for the LDCs to be adjusted in a manner which directly accounts for the deviation between book and market value so as to translate the current cost of equity into a fair return on book value?

A. Yes, in a competitive market, stock prices will, over the long term, tend toward an equilibrium level at which market value is equal to the replacement cost of the underlying assets.

Thus, an adjusted DCF test that recognizes the replacement cost/book ratio, in contrast to a "spot" market/book ratio, provides a longer-term indicator of the required return on equity. By repricing the equity of the LDCs for past inflation, an approximation of the replacement cost can be made. The resulting replacement cost/book value for the 13 LDCs was 155% at the end of 1997. The average market/book ratio of the LDCs over the past business cycle was 161%, close to the replacement cost/book value, suggesting that recent market/book ratios are similar to those which should be achieved under the competitive model. It is therefore necessary to adjust the 10.5% DCF cost of equity to

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[1](...continued)
"There are three principal reasons for our unwillingness to place a great deal of weight on the results of any DCF analysis. One is the reason given by Mr. Brennan: the failure of the DCF model to conform to empirical reality. The second is the undeniable fact that rarely if ever do two expert witnesses agree on the terms of a DCF equation for the same utility . . . And, the third reason is that the unadjusted DCF result is almost always well below what any informed financial analysis would regard as defensible, and therefore requires an upward adjustment based largely on the expert witness' judgement. In these circumstances, we find it difficult to regard the results of a DCF computation as any more than suggestive." (Re PSI Energy, Inc., Cause No. 40003, Indiana Utility Regulatory Commission, September 27, 1996).

"Agreeing with the company that the DCF method exhibits problems, particularly when a utility's stock price varies materially from book value, the Judge derived his equity cost estimate by averaging DCF and Capital Asset Pricing Model (CAPM) results." Re National Fuel Gas Distribution Corporation Opinion No. 95-16, New York Public Service Commission, September 15, 1996).

"We are cognizant of the limitations of the DCF method. There are, however, shortcomings to be found in the CAPM and the risk premium methods as well. We reiterate what we have said many times before, that despite the problems with the use of any methodology, all methods should be considered and that the DCF method and the combined CAPM and RP methods should be given equal weight." (Re Maui Electric Company, Ltd., Decision and Order No. 13429, Hawaii Public Utilities Commission, August 5, 1994.)

reflect a no less than replacement cost/book value ratio of 155%, resulting in a return on equity of 13.6%.

In my opinion, unless an adjustment of this nature is made to the DCF cost for utilities, the results of the test provide no meaningful measure of the fair return on book equity. Hence, the fair return for Laclede using an appropriately adjusted DCF test is 13.6%.

RETURN ON FAIR VALUE RATE BASE

Q. How have you estimated the fair return on a fair value rate base?

A. Simulation of the long-run impact of competitive forces through regulation would entail application of the current cost of new capital to a rate base which reflects the current cost of equivalent productive capacity given the most recent technology. Such a rate base can be approximated by trending the rate base for the impact of experienced inflation. If the regulatory mode ensures that the investor would be given an opportunity to be compensated for the impact of inflation through a trending process, a real cost of equity, as distinguished from the nominal cost, should be applied to an equity base which has been trended or repriced for past inflation.

To provide LDCs an opportunity to preserve the real value of their capital similar to that afforded to investments in industries of reasonably comparable risk, the measurement of a fair return on a fair value rate base should be based on achieved returns in relation to book equity trended upward to adjust for past inflation, or the loss of purchasing power.

Relating the earnings of the comparable industrials to their repriced common equity, adjusted for the LDCs' lower investment risk, results in a return on a fair value rate base of approximately 7.5% (9.4% unadjusted, Schedule 10). The

repricing methodology and the determination of the range of results is discussed in further detail in Appendix F.

APPENDIX A

Qualifications

of

KATHLEEN C. McSHANE

Kathleen McShane is a Vice President and senior consultant with Foster Associates, Inc., where she has been employed since 1981. She holds an M.B.A. degree in Finance from the University of Florida, and M.A. and B.A. degrees from the University of Rhode Island. She is also a Chartered Financial Analyst.

Ms. McShane worked for the University of Florida and its Public Utility Research Center, functioning as a research and teaching assistant, before joining Foster Associates. She taught both undergraduate and graduate classes in financial management and assisted in the preparation of a financial management textbook.

At Foster Associates, Ms. McShane has worked in the areas of financial analysis, energy economics and cost allocation. Ms. McShane has presented testimony in 75 proceedings on rate of return and capital structure before federal, state, provincial and territorial regulatory boards, on behalf of U.S. and Canadian telephone companies, gas pipelines and distributors, and electric utilities. These studies include the assessment of the impact of competition, rate design, contractual arrangements, and capital structure on return requirements. She has testified before the National Energy Board on behalf of Gaz Metropolitain and the Government of Québec on pipeline cost allocation, quantifying the impact on transportation rates of changes in zoning and of rolled-in versus incremental pricing, has presented evidence on price cap regulation for Maritime Electric before the Island Regulatory and Appeals Commission of Prince Edward Island, and has testified before the Ontario Energy Board on economic principles of cost allocation. Ms. McShane has also provided consulting services for AGT, Ltd., ED TEL, Maritime Electric and Northwest Territories Power on financial issues, including financing, dividend policy, corporate structure, cost of capital and form of regulation.

Ms. McShane was principal author of a study on the applicability of alternative incentive regulation proposals to Canadian gas pipelines. She was instrumental in the design and preparation of a study of the profitability of 25 major U.S. gas pipelines, in which she developed estimates of rate base, capital structure, profit margins, unit costs of providing services, and various measures of return on investment. In a study prepared for the Canadian Ministry of Energy, Ms. McShane analyzed Federal regulation of U.S. pipelines, including trends in rate design and rate structures. Ms. McShane has also co-managed market demand studies, focusing on demand for Canadian gas in U.S. markets. Other studies performed by Ms. McShane include a comparison of municipal and privately owned gas utilities, an analysis of the appropriate capitalization and financing for a new gas pipeline, risk/return analyses of a proposed water company and an independent power project, and a study on pricing of a competitive product for the U.S. Postal Service. She has also conducted seminars on cost of capital for regulated utilities, with focus on the Canadian regulatory arena.

Publications and Papers

- "Marketing Canadian Natural Gas in the U.S.", (co-authored with Dr. William G. Foster), published by the IAEE in Proceedings: Fifth Annual North American Meeting, 1983.

- "Canadian Gas Imports: Impact of Competitive Pricing on Demand", (co-authored with Dr. William G. Foster), presented to A.G.A.'s Gas Price Elasticity Seminar, March 1986.

- "Market-Oriented Sales Rates and Transportation Services of U.S. Natural Gas Distribution Companies", (co-authored with Dr. William G. Foster), published by the IAEE in Papers and Proceedings of the Eighth Annual North American Conference, May 1987.

- "Incentive Regulation: An Alternative to Assessing LDC Performance", (co-authored with Dr. William G. Foster), presented at the Natural Gas Conference, Chicago, Illinois, sponsored by The Center for Regulatory Studies (May 1993).

- "Atlanta Gas Light's Unbundling Proposal: More Unbundling Required?" presented at the 24th Annual Rate Symposium, Kansas City, Missouri, sponsored by several Commissions and Universities (1998)

Expert Testimony/Opinions
on
Rate of Return & Capital Structure

Alberta Natural Gas	1994
Alberta Power	1989, 1991, 1993, 1995, 1998
BC Gas	1992, 1993
Bell Canada	1987, 1993
Canadian Western Natural Gas	1989, 1998
Centra Gas B.C.	1992, 1995, 1996
Centra Gas Ontario	1990, 1991, 1993, 1994, 1996
Consumers Gas	1988, 1989, 1991, 1992, 1993, 1994, 1995, 1996, 1997
Dow Pool A Joint Venture	1992
Edmonton Water	1994
Foothills Pipe Lines	1993
Gaz Metropolitain	1988
Gazifère	1993, 1994, 1995, 1996, 1997, 1998
Laclede Gas Company	1998
Multi-Pipeline Cost of Capital Hearing	1994
Natural Resource Gas	1994, 1997
Newfoundland Power	1998
Newfoundland Telephone	1992
Northwestern Utilities	1987, 1990
Northwest Territories Power Corp.	1990, 1992, 1993, 1995
Ontario Hydro Services Corp.	1999
Pacific Northern Gas	1990, 1991, 1993, 1997
St. Lawrence Gas	1997
Southern Union Gas	1990, 1991, 1993
Stentor	1997
Tecumseh Gas Storage	1989, 1990
TransCanada PipeLines	1988, 1989, 1991 (2 cases), 1992, 1993
TransGas and SaskEnergy LDC	1995
Trans Québec & Maritimes Pipeline	1987
Union Gas	1988, 1989, 1990, 1992, 1994, 1996, 1998
Westcoast Energy	1989, 1990, 1992 (2 cases), 1993
West Kootenay Power	1995
Yukon Electrical Co. Ltd./Yukon Energy	1991, 1993

APPENDIX B

COMPARABLE EARNINGS TEST

Principal Application Issues

The principal issues in the application of the comparable earnings test are:

- The selection of a sample of industrials of reasonably comparable risk to utilities.

- The selection of an appropriate time period over which returns are to be measured in order to estimate prospective returns.

- The need for an adjustment to the "raw" comparable earnings results to reflect the differential risk of utilities relative to the selected industrials.

Selection Process

The selection process starts with the recognition that industrials are exposed to higher business risk, but lower financial risk, than utilities. The selection of industrials focuses on total investment risk, i.e., the combined business and financial risks. The comparable earnings test is based on the premise that industrials' higher business risks can be offset by a more conservative capital structure, thus permitting selection of industrial samples of reasonably comparable investment risk to utilities.

Utilities are generally characterized by relatively low volatility with respect to both earnings and stock market performance. Since consumer-oriented industries, due to their demand characteristics, are likely to exhibit relatively greater stability than other

industries (e.g., extractive industries), the initial universe selection was limited to consumer-oriented industries (SIC codes 2000-3999 and 5000-5999).[1]

From this universe U.S. firms were selected with book data available since 1984, market data available since December 1993 and with common equity of at least $250 million. This initial screen yielded 477 companies. Next, companies with a *Value Line* Safety Rank[2] of 2 were selected, reducing the number of companies to 63. A Safety Rank of 2 is equivalent to the average Safety Rank of the 17 company LDC sample (Schedule 4).

From this group, four companies whose 1989-1997 average returns were above or below one standard deviation from the average were eliminated in order to exclude companies whose earnings are either extraordinarily profitable or chronically depressed. The remaining 59 companies were then arrayed in ascending order of *Value Line* beta. Companies with betas of one or higher were eliminated, producing a final sample of 35 companies. The list of 35 companies is found on Schedule 6.

[1]The major industrials represented by these SIC codes are: Food and Kindred Products, Tobacco Products, Textiles, Lumber and Wood Products, Paper Products, Petroleum Refining, Chemicals, Rubber, Plastics, Glass, Concrete, Primary Metals, Fabricated Metals, Industrial/Commercial Machinery, Transportation Equipment, Computer and Electronic Equipment, Measuring Equipment, Wholesale and Retail Operations for both durable and non-durable goods.

[2]*Value Line's* definition of Safety Rank is:

" A measure of potential risk associated with individual common stocks rather than large diversified portfolios (for which Beta is a good risk measure). Safety is based on the stability of price, which includes sensitivity to the market (see Beta) as well as the stock's inherent volatility, adjusted for trend and other factors including company size, the penetration of its markets, product market volatility, the degree of financial leverage, the earnings quality, and the overall condition of the balance sheet. Safety Ranks range from 1 (Highest) to 5 (Lowest). Conservative investors should try to limit purchases to equities ranked 1 (Highest) or 2 (Above Average) for Safety."

Sample Risk Characteristics

The sample has the following risk characteristics, compared to the sample of LDCs:

	Industrials (Average)	LDCs (Average)
S&P: Debt Ratings	A-	A-
Value Line Risk Measures:		
Safety Rank	2	2
Earnings Predictability	73	62
Financial Strength	A	B++
Beta	0.83	0.59
Common Equity Ratio	66%	45%

Source: Schedules 2, 4, 6 and 7.

Although the individual values for the LDCs and industrials are not identical, they are similar enough so that the returns for the industrials can be used as a point of departure. As suggested earlier, the common equity ratios of the industrials are higher than those of the LDCs (66% versus 45%), confirming that the industrials' higher business risks tend to be offset by lower financial risks (Schedules 2 and 6). To recognize that the betas indicate that the LDCs face lower investment risk, an adjustment to the industrials return can be quantified using the relative beta coefficients of the two samples.

Period for Measurement of Returns

The measurement of returns for competitive industrials is, in large part, historical. The test, however, is intended, as are all tests used to estimate the fair return, to be prospective in nature. Therefore, the returns earned in the past should be analyzed in the context of the longer-term outlook for the economy to determine the reasonableness

of relying on past returns as a proxy for the future. Since returns on equity tend to be cyclical, the returns should be measured over an entire business cycle, in order to give fair representation to years of expansion and decline. The forward looking nature of the estimate of the fair return requires selection of a cycle which is reasonably representative of prospective economic conditions. The past business cycle (measured from point to point), covering the period 1989-1997, meets those criteria, essentially because it reflects an inflation rate (2.9% based on the GDP Price Index) and real economic growth rate (2.4%) (Schedule 8) that are quite close to the consensus estimates for longer-term (10-year) inflation and growth (2.4% inflation measured by the GDP Price Index; 2.45% expected growth in real GDP).[1]

The achieved returns of the 35 companies for 1989-1997 are as follows:

Average	16.1%
Median	16.2%
Average of Annual Medians	16.6%

Source: Schedule 9.

The results indicate that a low risk industrial in the consumer-oriented industries may be expected to earn a return of approximately 16.0-16.5%.

Relative Risk Adjustment

The results can be adjusted by reducing that portion of the book return in excess of the yield on a risk-free long-term security proxied by the 30-year Treasury bond (i.e., the risk premium) by the ratio of LDC betas to the industrial betas. Using a forecast yield of 5.25% on 30-year Treasury bonds as the risk-free rate, the average LDC beta of 0.59,

[1]Blue Chip Economic Indicators, October 1998.

and the average industrial beta of 0.83 (Schedules 4 and 7), the adjustment is made as follows:[1]

.59/.83 (16.0% - 5.25%) + 5.25% = 12.9%.
.59/.83 (16.5% - 5.25%) + 5.25% = 13.25%.

The risk-adjusted result of approximately 13.0-13.25% represents the fair return on original cost book equity for Laclede, and, as such, a return which is compatible with providing an opportunity to a utility to earn a return in relation to original cost book value commensurate with that achievable by competitive firms of similar investment risk.

[1]The adjustment effectively relies on the assumptions underpinning the Capital Asset Pricing Model discussed in Appendix C.

APPENDIX C

EQUITY RISK PREMIUM TEST

Conceptual Considerations

The risk premium test is derived from a basic concept of finance which holds that there is a direct relationship between the risk of an investment and the return that an investor will require to commit capital to the investment. Since an investment in common equity is generally riskier than a bond investment, the required return for a common stock is higher than that for a bond. The equity risk premium test, as applied herein, measures the risk premium required by an investor relative to an investment in long-term U.S. Treasury bonds. The U.S. Treasury bond, which is considered to be free of default risk, represents a proxy for the long-term risk-free rate.

The equity risk premium expected or required by investors is not static; it widens and narrows with changes in economic and capital market conditions (e.g., the business cycle and inflation) and is also dependent on the risk of the individual company. This suggests that a technique for measuring the risk premium that tracks changes in the required risk premium would be preferable to one which only averages achieved risk premiums over long periods.

In principle, there are two broad approaches which can be used to estimate the required risk premium. The first measures the risk premium for the entire stock market, which can be developed from an analysis of achieved market risk premiums or prospective estimates of market risk premiums. These estimated market risk premiums are then adjusted to reflect the risk of a particular stock or industry relative to the market as a whole. The Capital Asset Pricing Model (CAPM) provides a theoretical basis for

making the relative risk adjustment. The CAPM presumes that all investors are diversified and are compensated only for market, or systematic risk, which cannot be diversified away. This systematic risk, or beta, is a measure of the relative volatility of a particular stock, or class of securities, in relation to the volatility of the capital market as a whole. Therefore, the risk premium for a particular stock or portfolio is the market-wide risk premium multiplied by its beta coefficient.

The second approach develops the risk premium for a particular stock or industry directly.

The notion that the equity risk premium may fluctuate in a predictable and quantifiable fashion stems from the observation that as nominal interest rates rose in the late 1970s and early 1980s, the equity risk premium narrowed. Three studies of U.S. data quantified this relationship.[1]

One explanation of the observed inverse relationship between interest rates and equity risk premiums is the increasing level of uncertainty that appears to accompany rising inflation. As the expected rate of inflation rises, investors perceive increasing uncertainty that the actual future inflation rate will be different from the expected rate. Since investors in bonds are adversely affected by rising inflation, greater uncertainty regarding the future course of inflation may lead to a perceived increase in the riskiness of bonds relative to stocks, and hence an incremental risk premium on bonds for the uncertainty of inflationary expectations. This has been referred to as a "lock-in" premium. Thus, when capital markets are characterized by high and volatile levels of

[1]These three studies support an inverse relationship between interest rates and risk premiums both for industrials and utilities: Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, "The Risk Premium Approach to Measuring a Utility's Cost of Equity", Financial Management, Spring 1985; Robert S. Harris, "Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return", Financial Management, Spring 1986; Robert S. Harris, "Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts, Financial Management, Summer 1992.

nominal interest rates, the equity risk premium (i.e., the required premium above bond yields) declines; conversely, when inflation fears abate, the equity risk premium will tend to rise.

However, there is also global evidence that recent lower rates of inflation have been associated with higher real rates of interest. Currently, 30-year U.S. inflation indexed bonds are yielding approximately 3.7%, which lies well above the 2.0-2.5% real rate which might have been anticipated based on historical experience and empirical studies utilizing experienced real rates as a proxy for expected real rates. While there is no definitive basis for this phenomenon, increasing global demand for capital has been proffered as one explanation for the recent higher real interest rates.

Higher real interest rates in the face of declining inflation expectations are confirmed by the fact that neither nominal interest rates nor costs of other forms of capital, e.g., equity capital, have declined to the same extent as inflation. As inflation has become more stable in recent years, there should be less volatility in the required risk premium than during the high to moderate inflationary periods of the early and mid to late 1980s, with variations arising primarily from:

(a) cyclical business risks;
(b) changes in the tax structure; and,
(c) fundamental industry structure changes.

Risk Free Rate

The starting point for the application of the risk premium test is the expected yield on 30-year Treasury bonds, which serve as a proxy for the risk-free rate. Reliance on the 30-year Treasury yield recognizes (1) the administered nature of short-term rates; and (2) the long-term nature of the assets to which the equity return is applicable.

The most recent Blue Chip Financial Forecast (March 1, 1999) of 5.25% for 30-year Treasuries for 1999 provides a conservative point of departure for the long Treasury yield to which the equity risk premium is added. At March 1, 1999, the yield on 30-year Treasuries was 5.7%.

Application of the Capital Asset Pricing Model

The application of the Capital Asset Pricing Model requires an estimate of the required market risk premium and an estimate of the relative risk adjustment, or beta, to recognize the differential risk between the market and the stock or industry being analyzed.

The estimation of the required market risk premium relies on two approaches:

(1) historic achieved risk premiums based on long-term differentials between achieved returns on U.S. Treasury bonds and Standard & Poor's 500 Composite. Reliance on historic risk premiums as a measure of future expectations reflects the assumption that experienced risk premiums and expectations, on average, converge.

(2) A prospective market risk premium based on the difference between discounted cash flow estimates of the expected market return for the S&P 500 and the corresponding long-Treasury yields, adjusted for the forecast yield on long Treasury bonds.

In looking at achieved market risk premiums, I recognize that reliance on longer-term periods is essential to capture all types of economic events; this factor must be balanced with the recognition that structural changes in the economy may alter the relationship

between experienced and expected risk premiums. The latter consideration warrants placing the same weight on the post-World War II period.

The following table summarizes the U.S. experience for both the longest period available as well as for only the post-Wold War II period. The latter is intended to capture any changes in the basic structure of the economy which may have occurred, while still incorporating the various types of economic events (e.g., periods of boom and recession, high and low inflation rates) which may be repeated in the future:

IBBOTSON & SINQUEFIELD: HISTORIC EQUITY RISK PREMIUMS	
1926-1998	**1947-1998**
7.5%	8.3%

Source: Schedule: 11.

The returns above reflect the arithmetic average of the one-year returns. In the context of relying on experienced returns as a proxy for future returns, the arithmetic average is regarded as the appropriate measure. As explained by Ibbotson Associates, *Stocks, Bonds, Bills and Inflation, 1998 Yearbook*, pp. 157-159: "The expected equity risk premium should always be calculated using the arithmetic mean. The arithmetic mean is the rate of return which, when compounded over multiple periods, gives the mean of the probability distribution of ending wealth values . . . in the investment markets, where returns are described by a probability distribution, the arithmetic mean is the measure that accounts for uncertainty, and is the appropriate one for estimating discount rates and the cost of capital."

The above data indicate that, based solely on an analysis of experienced premiums, investors could expect an equity risk premium of approximately 7.5-8.25%.

The experienced market risk premium may converge with investor expectations over the longer-term, but the application of a current interest rate to a longer-term average may be unrepresentative of investor expectations in a specific capital market environment.

It is widely accepted that the required market risk premium is not static, but varies with the outlook for inflation, interest rates and profits (e.g., the business cycle). Hence, a direct measure of the prospective market risk premium is likely to provide a more accurate measure of the current level of the expected differential between stock and bond returns.

The market premium may be determined by application of the DCF model to the S&P 500. To illustrate, the fourth quarter 1998 dividend yield for the S&P 500 was 1.3%. The consensus forecast for five year normalized earnings growth rates available for the index from IBES for the fourth quarter 1998 was 14.6%. The resulting DCF cost is 16.1% (Schedule 12). The difference between the expected market return of 16.1% and the long-Treasury yield of 5.25% produces a forward looking estimate of the market risk premium of 10.8%.

A test was made of the proposition discussed earlier that the market risk premium is inversely related to the level of interest rates. As these relationships may change over time, the analysis was limited to the last ten years (1989-1998). For this test, the quarterly DCF cost of equity (first quarter 1989-fourth quarter 1998) was estimated for the S&P 500 as the sum of the quarterly average dividend yield and the respective IBES five-year earnings growth projections (as a proxy for longer-term growth). The quarterly risk premium was then calculated as the differential between the DCF cost and

the quarterly yield on long-Treasury bonds. The average risk premium over the period was 7.9%; the corresponding bond yield was 7.3% (Schedule 12).

An analysis of the relationship between market risk premiums and interest rates, indicates the following relationship:

$$\text{Market Risk Premium} = 14.7 - .93 \text{ (Long Treasury Yield)}$$

$$R^2 = 76.5\%$$

At a long-Treasury yield of 5.25%, the indicated forward-looking market premium is 9.8%.

Considering both the experienced risk premiums and forward-looking market premium estimates, the required market premium is approximately 7.5-9.5%, or a mid-point of 8.5%.

The 8.5% market risk premium needs to be adjusted to reflect the risk of LDCs relative to the market. For this purpose, a sample of publicly traded LDC's was selected from the group of companies classified by *Value Line* as natural gas distributors. Only those companies meeting the following criteria were included in the sample.

- 1997 net revenues above $100 million

- At least 85% of 1997 year-end net assets devoted to natural gas distribution operations.

This resulted in a sample of 17 gas distributors, listed on Schedule 1.[1]

To represent relative risk, I used the betas of the selected sample of LDCs. Any beta coefficient is subject to measurement error, arising from company-specific circumstances which can bias the beta, including thin trading, takeover rumors, and overreaction to earnings reports. Therefore, absent significant differences in total business and financial risk between the subject company and the sample, it is preferable to use a sample average. Moreover, empirical studies have shown that the CAPM understates the return requirement for companies with betas less than the market mean of 1.0. Reliance on *Value Line* betas, which are adjusted for betas' tendency to trend toward the market mean of 1.0, assists in mitigating the model's tendency toward understatement of required returns for low beta (e.g., utility) stocks.

The average *Value Line* beta for the sample of LDCs is 0.59. (The individual *Value Line* (December 1998) betas for the 17 LDCs are provided in Schedule 4.)

In summary, the analysis of historic and forward looking market risk premiums in conjunction with *Value Line* betas for the proxy sample of gas LDCs indicates a required equity risk premium of 5.0% (0.59 x 8.5%).

Risk Premium based on Achieved Risk Premiums for the Gas Distribution Industry

Reliance on achieved risk premiums for the gas distribution industry as an indicator of what investors expect for the future is based on the same proposition as that used in the development of the market risk premium: over the longer term, investors' expectations and experience converge. The more stable an industry, the more likely it is that this convergence will occur.

[1]Excludes Laclede.

The achieved equity risk premiums for Moody's Gas Distribution Index[1] were calculated over the period 1947-1998. The average historic arithmetic (1-year) risk premium was 6.4%, indicating a risk premium of approximately 6.5% (Schedule 11).

DCF-Based Equity Risk Premium Test for LDCs

A forward looking risk premium for a utility can be estimated as a series of differences between the discounted cash flow estimates of the cost of equity for a representative sample of utilities and the corresponding long government bond yield, where the DCF cost is the sum of the dividend yield (adjusted for growth) and the investor's expectation of long-term growth. Investment analysts' consensus forecasts of five-year (normalized) earnings growth, available from IBES International, Inc., are used as a proxy for investors' expectations of long-term growth.

For each gas distributor followed by *Value Line* for which adequate IBES data were available,[2] monthly DCF costs were estimated as the sum of the month-end dividend yield and the corresponding IBES five-year earnings growth expectation. The monthly risk premium was calculated as the difference between the DCF cost and the month-end long Treasury bond yield. The analysis was limited to the post 1991 recession (January 1992-January 1999).

The average risk premium over the period was 4.0%; the corresponding Treasury bond yield averaged 6.7% (Schedule 14). The time series nature of the data lends itself to an analysis of the relationship between risk premium and interest rate changes over time.

[1]The Moody's Gas Distribution Index is comprised of the following eight companies: AGL Resources, Inc.; Bay State Gas; Brooklyn Union Gas Co.; Indiana Energy Inc.; Laclede Gas Co.; Northwest Natural Gas Co.; Peoples Energy Corp. , and Washington Gas Light Co.

[2]Excludes companies with less than three analysts' forecasts. The resulting sample of 13 gas distributors is shown on Schedule 13.

A regression analysis used to estimate this relationship indicates the following:

U.S. Gas Distributor Risk Premium = 7.93 -.58 (long Treasury yield)

R^2 = 31.0%

At a long Treasury yield of 5.25%, the indicated risk premium is 4.9%.

Conclusions from the Equity Risk Premium Tests

The table below summarizes the results of the market risk premium tests.

Capital Asset Pricing Model	5.0%
Achieved Gas Distribution Utility Risk Premiums	6.5%
DCF-Based Risk Premium for Gas Distributors	4.9%

The results indicate a required risk premium for an average risk gas distributor of approximately 5.5% at a long Treasury yield of 5.25%. The resulting cost of equity is 10.75% before adjustment for financing flexibility.

Adjustment for Financing Flexibility

Similar to the DCF model, the equity risk premium model in principle results in a return required on the current value of equity. However, since reliance on historic risk premiums may incorporate some compensation for experienced inflation, any adjustment to the cost rate above a minimum flotation cost allowance is judgemental. As fully described in Appendix E, an adjustment of 50 basis points for flotation costs raises the risk premium test result to approximately 11.25%. Since the adjustment reflects only a minimal flotation cost allowance, this type of analysis will tend to understate a fair return on original cost book value.

APPENDIX D

DISCOUNTED CASH FLOW TEST

Conceptual Underpinnings

The discounted cash flow approach proceeds from the proposition that the price of a common stock is the present value of the future expected cash flows to the investor, discounted at a rate which reflects the riskiness of those cash flows. If the price of the security is known (can be observed), and if the expected stream of cash flows can be estimated, it is possible to approximate the investor's required return (or capitalization rate) as the rate which equates the price of the stock to the discounted value of future cash flows.

Theoretically, the cost flows extend to infinity. However, as the expected cash flows extend further into the future, their discounted value adds less and less to the price of the stock. Moreover, investors in common stocks are unlikely to forecast (or be able to forecast with any accuracy) cash flows beyond five years.

There are multiple versions of the discounted cash flow model available to estimate the investor's required return. An analyst can employ a constant growth model or a multiple period model to estimate the cost of equity. The constant growth model rests on the assumption that investors expect cash flows to grow at a constant rate throughout the life of the stock. Alternatively, if the growth rate in earnings and dividends can be expected to alter as the stock passes through the life cycle from initial growth to maturity to decline, a multiple period model can be used which incorporates changing growth expectations.

The subsequent analysis uses the constant growth model. The constant growth model is expressed as follows:

$$\text{Cost of Equity (k)} = \frac{D_o (1 + g)}{P_o} + g$$

In words, the formula states that the DCF cost of equity is equal to the dividend yield plus the expected constant growth rate. The dividend yield component $D_o (1 + g)/P_o$, is equivalent to the next expected dividend divided by the recent price.

Estimation of Growth Expectations

The assumption that investors expect a stock to grow at a constant rate over the longer term is most applicable to stocks in mature industries. Growth rates in these industries will vary from year to year and over the business cycle, but will tend to deviate around a long-term expected value. As a pragmatic matter, the application of a constant growth model is compatible with the likelihood that investors do not forecast beyond five years. Hence, the current market price and dividend yield do not explicitly anticipate any changes in the outlook for growth.

However, the inability to measure investor expectations of growth is one of the limitations of the DCF approach. Note that it is the investor's expectations that must be inferred; it is the investors who have set the market price. Even if the underlying expectations appear unreasonable, i.e., seem to represent a "castle in the air view", if these expectations are embedded in the dividend yield, these expectations must be accepted if the dividend yield and growth rate components are to be internally consistent.

Various studies have concluded that analysts' forecasts are a better predictor of growth than naive forecasts equivalent to historic growth; moreover analysts' forecasts have

been shown to be more closely related to investors expectations.[1] In addition, the impending restructuring of the gas distribution industry renders historical growth rates suspect as a measure of investor expectations.

Forecasts are widely available to both individual and institutional investors; the latter are particularly influential in determining market movements. Each month IBES International, Inc. releases its compilation of a consensus of analysts' forecasts for longer-term (5-year) normalized earnings growth rates for individual companies. The IBES estimates are virtually a standard input to DCF models for estimating the cost of equity. In principle, in the longer-term growth in dividends, earnings, book value and stock price should be the same. Since earnings are the fundamental driving force behind potential growth in dividends, forecasts of normalized earnings growth are a reasonable approximation for investor expectations of future dividend growth.

I applied the discounted cash flow test to a sample of 13 LDCs that serve as a proxy for Laclede. This sample includes all LDCs:

(1) classified by *Value Line* as a gas distributor;

(2) with 1997 net revenues of at least $100 million;

(3) with assets devoted to natural gas distribution operations of no less than 85% of total assets; and

(4) with no fewer than three individual analysts' estimates of growth in the IBES data base.

[1]Support for these statements are found in the following studies: Dov Fried and Dan Givoly, "Financial Analysts Forecasts of Earnings: A Better Surrogate for Market Expectations," *Journal of Accounting and Economics*:, Vol. 4, 1982; T. Daniel Coggin and John E. Hunter, "Analysts' EPS Forecasts Nearer Actual than Statistical Models", *Journal of Business Forecasting*, Vol. 1, Winter 1982-1983; Robert S. Harris, "Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return", *Financial Management*, Spring 1986.

The resulting 13 LDCs are found on Schedule 13.

I did not, however, apply the model directly to Laclede itself, nor did I include Laclede in the proxy LDC sample. Any DCF estimate which relies only on data for a single company is subject to measurement errors, and entails considerable circularity. Reliance on data for a sample of similar risk companies permits a greater degree of confidence.

Application of the DCF Model to LDCs

The average and median IBES expectation of long-term earnings growth (January 1999) for the 13 gas distributors were 5.7% and 5.5% respectively. The dividend yields, calculated using the average of the closing prices for the three months ending January 1999 in relation to the corresponding dividend, were 4.5% (average) and 4.7% (median) for the LDC sample. (Schedule 13).

The current dividend yield needs to be adjusted for growth expectations in order to be compatible with the constant growth model. The dividend yield component of the model contains the next expected dividend as measured by the current dividend (D_o) adjusted for the longer term growth expectation. Hence, the current dividend yields of 4.5% and 4.7% (average and median respectively) should be adjusted for the corresponding growth rates of 5.7% and 5.5% to arrive at a yields of 4.8% and 5.0%. When the adjusted yields are added to the expected growth rates, the required return on the current value of equity is approximately 10.5%.

The 10.5% cost rate represents the return investors expect to achieve on the current value of their investment in LDC common equities. It does not represent the return on book value investors expect LDCs to earn. *Value Line* publishes quarterly its longer-term estimates of returns on book value for each of the LDCs in the proxy sample. The average ROE *Value Line* projects that the 13 LDCs will earn during the period 2001-2003 is 13.1% (Schedule 15).

It is clear that there is a "disconnect" in logic if one assumes that investors expect the return on equity to be set at the DCF cost of equity. The return that investors expect to earn is a dollar return. A 10.5% return on the current value of equity is clearly not equivalent to a 10.5% return on book value when the market value exceeds book value. Assume that an LDC stock with a market/book ratio of 175% has a market price of $17.50 and a book value of $10.00. In simplistic terms, a 10.5% return on the market price of $17.50 is $1.84; a 10.5% return on a book value of $10.00 is only $1.05.

Not only is the 10.5% inconsistent with the 13.1% forecast ROE, but it represents a value which, if applied to book value, rather than to the market value from which it was derived, will tend to push the market value toward book value, i.e., to a market/book ratio of 1.0. It is illogical to presume that investors in utility stocks are prepared to pay a premium of close to 75% above book value, when the acceptance of the DCF result as a measure of the fair return on book equity would cause investors to suffer a significant loss as the market value of their stock declined toward book value.[1]

The regulator should examine the underlying premises of the tests to see if they are valid under current market circumstances. In current capital markets, the wide deviation between market price of utility stocks and the book value means that the return estimated by reference to a utility market price will not equate to the returns expected on book value. These returns will only be equivalent when the market value is close to the book value. Hence, the application of an unadjusted DCF cost to the book value of

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[1]To illustrate, assume a utility's book value is $10.00 and its stock sells at $17.50 (so that its market-to-book ratio is 175%); its approved return is 13.0% (earnings per share of $1.30); and its payout ratio is 65% (dividend per share of $0.845). An application of the DCF formula would show a yield of 4.8% ($0.845 ÷ $17.50), and a longer-term "sustainable" growth rate of 4.55% (35% x 13.0%, i.e., growth = percent of earnings retained x return on equity), for a DCF cost of 9.35%.

If the calculated DCF cost is applied to book value, earnings would decline to $0.935 per share ($10.00 x 9.35%), the payout ratio would rise to 90% ($0.845 ÷ $0.935) and the longer-term growth rate would decline to 0.9% (10% x 9.35%). Hence, investors' expectations for growth of 4.55% would not be realized, and the stock price would decline to book value. The expected return on the revalued stock would be 9.35%, comprised of a dividend yield of 8.45% ($0.845 ÷ $10.00) and growth of only 0.9%. However, the realized holding period return for an investor purchasing the stock at $17.50 per share (assuming a one year work-out period) would be a capital loss of 43%. The proposition that investors are willing to invest $17.50 per share to end up with a stock whose value is $10.00 defies common sense.

equity cannot result in a fair return when market values are significantly above book values.

To arrive at an estimate of a fair return on equity using the DCF test applied to utilities as a point of departure, it is necessary to recognize that under competition, equity market values tend to gravitate toward the replacement cost of the underlying assets. Absent inflation, the market value of firms operating in a competitive environment would tend to equal their book value or cost. This is due to the economic proposition that, if the discounted present value of expected returns (market value) exceeds the cost of adding capacity, firms will expand until an equilibrium is reached, when the market value equals the replacement cost of the productive capacity of the assets. However, the fact that inflation has occurred changes the above analysis. Under competition, the market value of a firm tends toward the current cost of its assets. The book value, by comparison, reflects the historic depreciated cost of the assets. Since there have been moderate to relatively high levels of inflation over the past two business cycles, one would expect the market value to deviate systematically from the book value.

For reliance on the DCF cost result to produce a return compatible with the premise that regulation is a surrogate for competition, the DCF cost should be adjusted to reflect the replacement/book value. In principle, this value should correspond to the long-run equilibrium market/book ratio.

One can approximate replacement cost by repricing the equity of the LDCs to account for the impact of inflation, thus providing a measure of what the long-term market/book value of LDCs should be in a competitive market. For the sample of 13 LDCs, the median repriced equity/book value ratio at the end of 1997 was 155%. The actual median market/book ratio of the utilities over the past business cycle (Schedule 16) was 161%, indicating that the utilities' actual market/book ratios have been quite close to the value consistent with competitive expectations.

Therefore, the replacement cost/book value relationship provides an economically sound basis for adjusting the current DCF cost of equity to a fair return on book value. The DCF model itself provides a technique for making the required adjustment.

$$ROE = \frac{M/B\ (k)}{1 + [r\ (M/B-1)]}$$

where:

ROE	=	return on book equity
k	=	market-derived cost of equity
r	=	earnings retention rate

The derivation of the formula is found on Schedule 17.

Using the repriced equity/book value ratio of 155% as a proxy for the longer-run competitive market/book ratio, a market-derived cost of equity of 10.5% and a longer-term earnings retention rate of 35%, the fair return can be estimated as follows:

$$\frac{1.55\ (10.5\%)}{1 + [.35\ (1.55 - 1.0)]} = 13.6\%$$

APPENDIX E

ADJUSTMENT FOR FLOTATION COSTS

The equity risk premium test result represents a return which conceptually, if applied to the book value of equity, would cause the utility market/book ratio to equal 1.0. This cost needs to be adjusted to permit the utility a certain degree of financial flexibility and integrity.

The flotation cost allowance is intended to serve two distinct but related purposes: first, to permit a company to recover all costs associated with issuing additional stock as required to meet its obligation to serve, at not less than book value per share, and thus without harming (diluting) the investment of existing shareholders, and second, to position the company at all times such that if it needs to issue additional equity to meet its obligation to serve, it can do so without harm to its existing shareholders.

The adjustment should at a minimum include:

(a) Financing costs, or out-of-pocket issue expenses. These comprise primarily administrative costs and the underwriters' fee. For gas distributors, this component averaged 5.8% over the 10-year period 1985-1994. On an after-tax basis, the cost is approximately 4.0%.[1]

(b) An allowance for market pressure, i.e., the tendency for the price of the stock to fall as an additional supply of stock is introduced into the market, of approximately 2-3 percent of the market price.

The article entitled "Total Flotation Costs for Electric Company Equity Issues", by Victor M. Borun and Susan L. Malley, *Public Utilities Fortnightly*, (February 20, 1986),

[1]EBASCO Services, Inc., *Analysis of Public Utility Financing*, various issues, 1985-1994.

summarizes the various studies which have been performed using utility data, as well as presents the results, of a study covering 641 electric utility issues. The various studies provide support for a market pressure adjustment of 2-3%.

Conceptually, the measurement of market pressure should be made by reference to the change in market price from the time of the announcement of the sale of additional equity to the time of the sale of this equity, with due regard to the trend of market prices in this period. However, the anticipation of raising equity may precede the announcement, particularly for utilities, so that the market may already reflect (partly, or entirely) the impact of dilution at the time of the announcement. It may then appear that there is no market pressure, when in fact it is merely not statistically measurable. To capture the impact of market pressure, it is therefore necessary to rely on a large number of observations. Moreover, since the flotation cost allowance is essentially a composite figure which is designed to recover flotation costs associated with past and future issues of various sizes, measurement of the market pressure component by reference to a large sample of issues of many relative sizes is appropriate.

The sum of the first two elements (6-7%) comprises an estimate of the minimum allowance required to afford a utility some financing flexibility.

This total gives no consideration to the fairness principle, which would recognize that competitive industrials have, in periods of moderate inflation, consistently been able to maintain the real value of their assets, as evidenced by market/book ratios significantly in excess of 1.0. Utilities should not be precluded from achieving a level of financial integrity that gives some recognition to the tendency for industrial market values to equate to replacement costs and thus produce market/original cost book values significantly in excess of 1.0. This is not only a fairness argument, but an economic argument, inasmuch as it is the role of regulation to simulate competition, under which long-run market value should equate to the replacement cost of the productive capacity. The argument is even stronger when regulated utilities are also exposed to competition.

Hence, a flotation cost adjustment of 6.5% is conservative.

A 6.5% flotation cost adjustment is approximately equivalent to an adjustment sufficient to permit a utility to maintain a market/book ratio of 1.065%.

The DCF formula provides a means of adjusting the market-derived cost to arrive at the book return required for a market/book ratio of 1.065% (see Schedule 17 for derivation):

$$\text{Return on Book Equity} = \frac{\text{Market/Book Ratio x Market-Derived Cost}}{1 + [\text{earnings retention rate } (M/B - 1)]}$$

To achieve a market/book ratio of 1.065%, based on a longer-term dividend payout ratio of 65% (retention rate of 35%) and a cost of capital of 10.75%, the required return is 11.2%.

$$11.2\% = \frac{1.065\ (10.75\%)}{1 + [.35\ (1.065 - 1.0)]}$$

Hence, a minimum flotation cost allowance, the difference between 11.2% and 10.75%, is approximately 50 basis points.

APPENDIX F

THE RETURN ON AVERAGE REPRICED COMMON EQUITY FOR LOW RISK INDUSTRIALS

To develop a fair return on a fair value rate base, using the comparable earnings test, net income available to common equity (before extraordinary items) was related to equity values which have been "repriced" (or trended), producing a rate of return on average repriced common equity. By repricing the common equity, the equity investment is restated in terms of current purchasing power. The estimate of earnings in relation to repriced equity produces a result which is compatible with the achievement of the competitive conditions that regulation is intended to simulate: the opportunity to achieve capital values which are commensurate with the replacement cost of the capital.

The Gross Domestic Product - Price Index (GDP-PI), the broadest measure of price trends available, was used to reprice the equity of the industrial sample. The rates of return on repriced equity are generated from a four-step process, which is implemented on a year-by-year, company-by-company basis.

First, the total dollars of common equity capital (on a nominal basis) at year-end were recorded for each company over the period for which data are readily available. The longest period available for any company was 36 years, 1962 to 1997.[1] This period reflects most of the inflation experienced in the post-World War II period. For each year

[1]Eight of the 35 companies in the industrial sample had data available from the Compustat database back to 1962. One company in the sample, McClatchy, only had data available back to 1987. All other companies had data back at least to 1971.

subsequent to the first year for which data were available, the incremental nominal dollar changes in year-end common equity were recorded for each company. This procedure assumes that all equity was in place at the beginning year of the analysis.

Second, as an example, for a company with data available back to 1962, 1962 book equity was inflated or repriced by the change in the GDP-PI from 1962 to 1963. The incremental nominal change in book equity added during the year 1963 was then added to this inflated 1962 book equity. The resulting sum is a "repriced" equity value for 1963. For 1964, the repriced 1963 value was inflated by the change in the GDP-PI from 1963 to 1964 and the nominal change in book equity during 1964 was added, producing a repriced value for 1964. This process was repeated each year through 1997. The new repriced values reflect equity investor contributions in past years restated to reflect the fact that those contributions were made with dollars of greater purchasing power.

Third, to produce average repriced equity values, each adjacent pair of year-end values were averaged.

Finally, income available for common before extraordinary items for each of the years 1989 to 1997 expressed in nominal dollars was divided by the corresponding average repriced common equity to yield the company's annual rate of return on average repriced equity, i.e., equity repriced for cumulative experienced inflation.

The purpose of this exercise is to restate the equity underpinning the assets in place for loss of purchasing power. As the assets are replaced, so is the equity through depreciation expense (recovery of capital). Hence, in principle, the vintage of equity in place should be approximately equal to the remaining number of years over which the capital is expected to be recovered, approximated by net assets divided by depreciation expense. For the sample of industrials the median remaining life is approximately 6 years. By extending the repricing period to no less than 27 years (for all companies

other than McClatchy), one can be confident that the impact of inflation has not been understated (or the returns overstated). Further, average annual inflation (GDP-PI) from 1963 to 1997 was 4.5% and 4.9% from 1971 to 1997. Inflation from 1947 to 1971, however, was only 2.7%.

The average returns on repriced equity for the industrial sample over the period 1989-1997 are as follows:

Average of Annual Medians	Median of Averages	Average of Averages
9.4%	9.3%	9.4%

Source: Schedule 10.

Since the resulting values are for a sample of somewhat higher risk than the LDCs, a downward adjustment must be made.

The adjustment is made using the same approach as was made to the industrials' normal nominal returns, with the exception that the downward adjustment was applied to the difference between the "real" (repriced) equity returns and the real cost of long-term debt. The real cost of long-term debt is estimated at 2.8%, which is equal to the 5.25% forecast yield on long Treasuries less the long-term expected rate of inflation as measured by the GDP-PI of 2.4%.[1]

The calculation of the return applicable to a fair value rate base is illustrated below:

$$.59/.83\ (9.4\% - 2.8\%) + 2.8\% = 7.5\%$$

[1]Blue Chip *Economic Indicators*, (October 1998). The exact calculation is made as follows: (1.0525 ÷ 1.024) -1 = (1.02780 - 1) = 2.8% real cost of long-term debt.

Using the three methods of calculating the average return for the industrials, the range of results is:

Average of Annual Medians	Median of Averages	Average of Averages
7.5%	7.4%	7.5%

For Laclede, the fair return is approximately 7.5%.

LACLEDE GAS COMPANY

Statistical Materials

to accompany

Prepared Testimony

of

KATHLEEN C. McSHANE

FOSTER ASSOCIATES, INC.
Bethesda, MD. 20814

March 1999

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NET REVENUES AND PERCENTAGE OF UTILITY ASSETS

FOR SELECTED LOCAL NATURAL GAS DISTRIBUTION COMPANIES

Company	1997 Net Revenues	1997 Percentage of Utility Assets
AGL RESOURCES INC	1287.6	100.0
ATMOS ENERGY CORP	906.8	93.0
CASCADE NATURAL GAS CORP	252.0	100.0
CONNECTICUT ENERGY CORP	305.6	100.0
CTG RESOURCES INC	195.8	87.0
INDIANA ENERGY INC	530.4	100.0
KEYSPAN ENERGY CORP	1478.2	100.0
NEW JERSEY RESOURCES	1992.6	93.0
NICOR INC	361.8	91.0
NORTHWEST NATURAL GAS CO	608.6	96.4
NUI CORP	696.5	94.0
PEOPLES ENERGY CORP	1274.4	100.0
PIEDMONT NATURAL GAS CO	775.5	100.0
PROVIDENCE ENERGY CORP	220.4	99.0
SOUTH JERSEY INDUSTRIES	348.6	97.0
SOUTHWEST GAS CORP	732.0	97.0
WASHINGTON GAS LIGHT CO	1055.8	100.0
LACLEDE GAS CO	602.8	100.0

Source: Standard & Poor's Compustat Services, Inc.,
SEC Form 10-Ks.

19GDSEL

CAPITAL STRUCTURE RATIOS FOR SELECTED
LOCAL NATURAL GAS DISTRIBUTION COMPANIES
(INCLUDING SHORT-TERM DEBT)

Company	Fiscal Year End	Long-Term Debt	Short-Term Debt	Preferred Stock	Common Equity
AGL RESOURCES INC	1998	50.1	5.2	0.0	44.7
ATMOS ENERGY CORP	1998	51.1	7.4	0.0	41.5
CASCADE NATURAL GAS CORP	1998	49.2	2.8	2.6	45.4
CONNECTICUT ENERGY CORP	1998	43.1	6.4	0.0	50.5
CTG RESOURCES INC	1998	63.7	0.6	0.3	35.5
INDIANA ENERGY INC	1998	36.3	6.3	0.0	57.3
KEYSPAN ENERGY CORP	1997	41.9	3.6	0.0	54.5
NEW JERSEY RESOURCES	1998	46.9	8.7	2.9	41.5
NICOR INC	1997	35.9	17.4	0.4	46.4
NORTHWEST NATURAL GAS CO	1997	42.2	10.5	4.4	42.9
NUI CORP	1998	43.5	15.9	0.0	40.5
PEOPLES ENERGY CORP	1998	41.3	0.7	0.0	58.0
PIEDMONT NATURAL GAS CO	1997	46.8	3.0	0.0	50.2
PROVIDENCE ENERGY CORP	1998	42.4	10.2	2.4	44.9
SOUTH JERSEY INDUSTRIES	1997	49.9	10.4	0.5	39.3
SOUTHWEST GAS CORP	1997	57.2	10.3	4.4	28.1
WASHINGTON GAS LIGHT CO	1998	39.3	10.0	2.3	48.5
Average		45.9	7.6	1.2	45.3
LACLEDE GAS CO	**1998**	**35.5**	**14.6**	**0.4**	**49.5**

Source: Standard & Poor's Compustat Services, Inc.

19GDCS

CAPITAL STRUCTURE RATIOS FOR SELECTED
LOCAL NATURAL GAS DISTRIBUTION COMPANIES
(EXCLUDING SHORT TERM DEBT)

Company	Fiscal Year End	Long-Term Debt	Preferred Stock	Common Equity
AGL RESOURCES INC	1998	52.8	0.0	47.2
ATMOS ENERGY CORP	1998	55.2	0.0	44.8
CASCADE NATURAL GAS CORP	1998	50.6	2.7	46.7
CONNECTICUT ENERGY CORP	1998	46.0	0.0	54.0
CTG RESOURCES INC	1998	64.0	0.3	35.7
INDIANA ENERGY INC	1998	38.8	0.0	61.2
KEYSPAN ENERGY CORP	1997	43.5	0.0	56.5
NEW JERSEY RESOURCES	1998	51.4	3.2	45.5
NICOR INC	1997	43.5	0.5	56.2
NORTHWEST NATURAL GAS CO	1997	47.2	4.9	47.9
NUI CORP	1998	51.8	0.0	48.2
PEOPLES ENERGY CORP	1998	41.6	0.0	58.4
PIEDMONT NATURAL GAS CO	1997	48.2	0.0	51.8
PROVIDENCE ENERGY CORP	1998	47.3	2.7	50.1
SOUTH JERSEY INDUSTRIES	1997	55.7	0.6	43.9
SOUTHWEST GAS CORP	1997	63.8	4.9	31.3
WASHINGTON GAS LIGHT CO	1998	43.6	2.6	53.8
Average		49.7	1.3	49.0
LACLEDE GAS CO	**1998**	**41.6**	**0.5**	**58.0**

Source: Standard & Poor's Compustat Services, Inc.

19GDCSX

S & P DEBT RATINGS AND VALUE LINE RISK MEASURES
FOR SELECTED LOCAL NATURAL GAS DISTRIBUTION COMPANIES

Company	S&P Senior Debt Rating		Value Line Risk Measures			
			Beta	Safety	Financial Strength	Earnings Predictability
AGL RESOURCES INC	BBB+		0.65	2	B++	85
ATMOS ENERGY CORP	A-		0.55	3	B++	60
CASCADE NATURAL GAS CORP	BBB+		0.55	3	B	45
CONNECTICUT ENERGY CORP	NA		0.60	2	B++	85
CTG RESOURCES INC	NA		0.50	2	B+	75
INDIANA ENERGY INC	A+		0.55	2	A	75
KEYSPAN ENERGY CORP	A-		NMF	1	A	NMF
NEW JERSEY RESOURCES	NA		0.55	2	B++	75
NICOR INC	A+		0.65	1	A+	90
NORTHWEST NATURAL GAS CO	A		0.60	2	B++	20
NUI CORP	BBB		0.70	3	B+	50
PEOPLES ENERGY CORP	A+		0.80	1	A	55
PIEDMONT NATURAL GAS CO	A		0.55	2	B++	80
PROVIDENCE ENERGY CORP	NA		0.50	3	B	40
SOUTH JERSEY INDUSTRIES	Baa	a/	0.50	2	B++	70
SOUTHWEST GAS CORP	BBB-		0.65	3	B	15
WASHINGTON GAS LIGHT CO	AA-		0.60	1	A	75
Average	A-		0.59	2	B++	62
LACLEDE GAS CO	AA-		0.50	1	A	60

a/ Moody's Senior Debt Rating for South Jersey Gas

19GDRS

INTEREST COVERAGE BEFORE TAXES
FOR SELECTED LOCAL NATURAL GAS DISTRIBUTION COMPANIES

Company	1993	1994	1995	1996	1997	1998	93-97 Average	94-98 Average
AGL RESOURCES INC	2.84	3.06	1.99	3.58	3.48	3.32	2.99	3.09
ATMOS ENERGY CORP	3.46	2.85	3.07	3.54	2.14	3.45	3.01	3.01
CASCADE NATURAL GAS CORP	2.86	2.07	2.16	1.58	2.68	2.42	2.27	2.18
CONNECTICUT ENERGY CORP	2.29	2.58	2.75	2.76	2.86	2.94	2.65	2.77
CTG RESOURCES INC	3.54	3.40	2.98	3.50	3.69	2.77	3.42	3.27
INDIANA ENERGY INC	4.29	4.26	4.24	5.14	2.88	4.73	4.16	4.25
KEYSPAN ENERGY	3.45	3.50	3.52	4.52	5.12	NA	4.02	NA
NEW JERSEY RESOURCES	2.76	3.02	2.94	3.56	3.87	4.34	3.23	3.54
NICOR INC	4.92	4.99	4.61	4.95	5.01	NA	4.90	NA
NORTHWEST NATURAL GAS CO	3.37	3.22	3.29	3.70	3.13	NA	3.34	NA
NUI CORP	2.51	1.83	1.46	2.24	2.60	2.09	2.13	2.04
PEOPLES ENERGY CORP	3.47	3.29	2.76	4.86	5.02	4.18	3.88	4.02
PIEDMONT NATURAL GAS CO	3.65	3.21	3.15	3.50	3.56	NA	3.41	NA
PROVIDENCE ENERGY CORP	2.61	3.07	2.36	2.94	2.65	2.26	2.73	2.66
SOUTH JERSEY INDUSTRIES	2.41	2.12	2.29	2.41	2.44	NA	2.33	NA
SOUTHWEST GAS CORP	1.47	1.76	1.08	1.28	1.42	NA	1.40	NA
WASHINGTON GAS LIGHT CO	4.03	4.05	4.13	5.26	4.82	3.88	4.46	4.43
AVERAGE	3.17	3.07	2.87	3.49	3.37	3.31	3.20	3.21
LACLEDE GAS CO	3.54	3.13	2.68	3.85	3.66	3.04	3.37	3.27

Source: Standard & Poor's Compustat Services, Inc.

ICBT

CAPITAL STRUCTURE RATIOS FOR 35 LOW RISK INDUSTRIALS
FISCAL YEAR END 1997

	Long-Term Debt	Short-Term Debt	Preferred Stock	Common Equity
AIR PRODUCTS & CHEMICALS INC	46.3	2.0	0.0	51.8
ALBERTO-CULVER CO	23.2	0.6	0.0	76.3
ALBERTSONS INC	33.6	0.0	0.0	66.4
AMP INC	5.9	11.6	0.0	82.5
BECTON DICKINSON & CO	30.8	5.7	1.0	62.4
BRIGGS & STRATTON	29.9	3.5	0.0	66.6
COMMERCIAL METALS	35.7	0.0	0.0	64.3
CONAGRA INC	41.1	13.9	0.0	45.0
DELUXE CORP	16.1	0.0	0.0	83.9
DEXTER CORP	32.1	5.9	0.0	62.0
EATON CORP	37.6	2.4	0.0	60.1
ECOLAB INC	32.0	3.9	0.0	64.2
FEDERAL SIGNAL CORP	6.1	40.7	0.0	53.2
GENERAL DYNAMICS CORP	16.0	0.0	0.0	84.0
HERSHEY FOODS CORP	48.6	12.1	0.0	39.3
HILLENBRAND INDUSTRIES	17.7	5.2	0.0	77.0
HORMEL FOODS CORP	20.2	0.0	0.0	79.8
JOHNSON CONTROLS INC	29.4	17.1	0.8	52.8
KNIGHT-RIDDER INC	51.8	0.0	0.1	48.1
LEE ENTERPRISES	11.2	27.7	0.0	61.1
LITTON INDUSTRIES INC	31.3	7.3	0.1	61.2
LUBRIZOL CORP	18.7	2.6	0.0	78.7
MCCLATCHY CO	14.3	0.0	0.0	85.7
OLIN CORP	24.0	0.0	0.0	76.0
PEPSICO INC	41.6	0.0	0.0	58.4
SARA LEE CORP	30.4	6.6	3.4	59.6
SHERWIN-WILLIAMS CO	34.6	4.1	0.0	61.3
SONOCO PRODUCTS CO	48.4	0.0	0.0	51.6
SUPERVALU INC	51.6	5.3	0.2	42.8
TECUMSEH PRODUCTS CO	2.3	2.2	0.0	95.6
THOMAS & BETTS CORP	33.6	1.7	0.0	64.7
TOOTSIE ROLL INDS	2.1	0.0	0.0	97.9
UNIVERSAL FOODS CORP	39.9	1.2	0.0	58.9
VF CORP	21.2	1.0	1.2	76.6
WESTVACO CORP	40.3	0.0	0.0	59.7
Average	28.6	5.3	0.2	66.0

Source: Standard & Poor's Compustat Services, Inc.

35INDCS

S & P DEBT RATINGS AND VALUE LINE RISK MEASURES
FOR 35 LOW RISK INDUSTRIALS

Company	S&P Senior Debt Rating	Value Line Risk Measures			
		Beta	Safety	Financial Strength	Earnings Predictability
AIR PRODUCTS & CHEMICALS INC	A	0.95	2	B++	70
ALBERTO-CULVER CO	BBB+	0.80	2	B++	95
ALBERTSONS INC	A+	0.80	2	A+	85
AMP INC	BBB	0.85	2	A+	85
BECTON DICKINSON & CO	A+	0.95	2	A	100
BRIGGS & STRATTON	BBB+	0.85	2	A	50
COMMERCIAL METALS	BBB+	0.85	2	B++	60
CONAGRA INC	BBB+	0.85	2	A	100
DELUXE CORP	A+	0.80	2	A+	50
DEXTER CORP	A	0.95	2	A	20
EATON CORP	A	0.85	2	A	65
ECOLAB INC	A	0.75	2	B++	95
FEDERAL SIGNAL CORP		0.80	2	A	85
GENERAL DYNAMICS CORP		0.85	2	A	25
HERSHEY FOODS CORP	A+	0.75	2	A	100
HILLENBRAND INDUSTRIES	A+	0.80	2	A	70
HORMEL FOODS CORP		0.65	2	A	65
JOHNSON CONTROLS INC	A-	0.95	2	A	100
KNIGHT-RIDDER INC	A	0.90	2	B++	50
LEE ENTERPRISES		0.80	2	A	80
LITTON INDUSTRIES INC	BBB+	0.85	2	B++	65
LUBRIZOL CORP	A+	0.80	2	B++	65
MCCLATCHY CO		0.70	2	B++	60
OLIN CORP	BBB	0.90	2	B++	40
PEPSICO INC	A	0.95	2	A+	80
SARA LEE CORP	AA-	0.70	2	A+	100
SHERWIN-WILLIAMS CO	A	0.90	2	A	100
SONOCO PRODUCTS CO	A	0.90	2	A	90
SUPERVALU INC	BBB+	0.80	2	B++	90
TECUMSEH PRODUCTS CO		0.65	2	A	60
THOMAS & BETTS CORP	BBB	0.90	2	B++	40
TOOTSIE ROLL INDS		0.70	2	A	95
UNIVERSAL FOODS CORP	BBB	0.75	2	B++	95
VF CORP	A-	0.75	2	B++	70
WESTVACO CORP	A	0.90	2	B++	40
Average	A-	0.83	2	A	73

Source: Standard & Poor's Compustat Services, Inc.; Value Line

35INDRS

INFLATION AND GROWTH AS MEASURED BY
THE GDP PRICE INDEX AND REAL GDP GROWTH
(Chained 1992 Dollars)

	GDP Price Index	Annual Inflation	Real GPD	Annual Growth
1987	83.1		5648.4	
1988	86.1	3.6%	5862.9	3.8%
1989	89.7	4.2%	6060.4	3.4%
1990	93.6	4.3%	6136.3	1.3%
1991	97.3	4.0%	6079.4	-0.9%
1992	100.0	2.8%	6244.4	2.7%
1993	102.6	2.6%	6389.6	2.3%
1994	105.1	2.4%	6610.7	3.5%
1995	107.5	2.3%	6761.7	2.3%
1996	109.5	1.9%	6994.8	3.4%
1997	111.6	1.9%	7269.8	3.9%
1998-3Q	112.8	-	7566.5	-
Compound Average Return:				
1988 -1996	3.1%		2.4%	
1989 -1997	2.9%		2.4%	

Source: Business Statistics, Survey of Current Business.

INFLGR

RETURNS ON EQUITY AND MARKET/BOOK RATIOS
FOR 35 LOW RISK INDUSTRIALS

Company	1989	1990	1991	1992	1993	1994	1995	1996	1997	Average 1989-1997	Average M/B Ratio 1989-1997
AIR PRODUCTS & CHEMICALS INC	16.4	14.7	14.1	14.1	9.6	10.8	16.0	16.7	16.4	14.3	220
ALBERTO-CULVER CO	20.0	17.9	12.5	14.4	14.1	14.1	15.1	15.8	18.5	15.8	269
ALBERTSONS INC	22.7	23.2	22.5	21.3	24.5	27.1	25.5	23.5	22.2	23.6	439
AMP INC	17.9	16.8	14.0	15.1	14.8	16.8	16.8	10.3	15.9	15.4	306
BECTON DICKINSON & CO	21.0	15.7	14.5	13.5	13.8	15.4	17.4	20.8	22.2	17.1	250
BRIGGS & STRATTON	-7.1	13.3	13.1	17.3	20.9	26.8	24.9	19.7	14.5	15.9	214
COMMERCIAL METALS	15.8	13.2	5.9	6.0	9.7	10.9	14.0	14.4	11.2	11.3	132
CONAGRA INC	22.5	20.0	17.2	17.1	19.3	20.0	7.6	26.0	23.9	19.3	373
DELUXE CORP	25.5	26.4	25.7	25.7	17.4	17.4	10.9	8.8	6.8	18.3	395
DEXTER CORP	13.6	12.6	-2.2	12.1	10.8	11.5	11.4	13.1	15.1	10.9	177
EATON CORP	19.5	15.7	6.5	13.3	17.5	23.9	21.8	16.9	21.9	17.5	230
ECOLAB INC	0.6	12.3	-69.6	20.0	21.2	20.2	21.6	23.2	25.0	8.3	329
FEDERAL SIGNAL CORP	18.7	22.0	20.0	20.0	21.0	22.3	22.0	23.8	20.6	21.2	381
GENERAL DYNAMICS CORP	14.5	-31.8	28.9	42.3	58.0	19.1	22.3	16.5	17.4	20.8	177
HERSHEY FOODS CORP	16.1	18.3	17.0	17.3	20.7	12.9	22.3	24.3	33.4	20.3	376
HILLENBRAND INDUSTRIES	19.8	18.0	19.2	20.3	24.6	13.4	12.5	18.3	18.8	18.3	378
HORMEL FOODS CORP	15.8	15.7	15.7	15.5	16.6	19.2	17.3	10.5	13.8	15.6	252
JOHNSON CONTROLS INC	10.4	8.4	8.3	10.3	11.5	13.9	14.9	16.1	17.7	12.4	162
KNIGHT-RIDDER INC	28.4	16.5	12.9	12.5	12.2	13.9	14.3	23.9	30.8	18.4	272
LEE ENTERPRISES	25.1	24.9	17.7	19.9	19.3	21.9	21.1	14.3	19.9	20.4	343
LITTON INDUSTRIES INC	14.6	13.9	5.1	13.8	11.3	-10.8	19.7	18.0	16.5	11.3	185
LUBRIZOL CORP	14.2	27.2	16.2	15.4	11.0	22.4	18.0	20.4	18.9	18.2	237
MCCLATCHY CO	12.3	8.7	7.3	8.7	8.6	11.3	7.4	9.2	12.9	9.6	168
OLIN CORP	17.8	11.1	-2.7	5.7	-17.5	12.0	17.8	30.8	16.8	10.2	166
PEPSICO INC	25.6	24.5	20.7	23.9	27.2	27.0	22.7	16.5	31.6	24.4	525
SARA LEE CORP	22.7	20.5	20.2	24.3	19.3	5.8	21.1	21.3	22.6	19.8	341
SHERWIN-WILLIAMS CO	17.2	17.1	15.7	16.3	17.0	17.9	17.7	17.5	17.4	17.1	273
SONOCO PRODUCTS CO	21.4	9.8	17.6	14.5	20.0	19.1	22.3	21.2	-0.1	16.2	311
SUPERVALU INC	17.9	16.8	20.7	15.2	15.4	3.5	13.9	13.9	18.5	15.1	195
TECUMSEH PRODUCTS CO	12.7	2.1	6.1	7.7	12.3	16.3	14.3	12.3	10.3	10.5	111
THOMAS & BETTS CORP	16.5	14.1	13.6	12.3	11.6	13.1	14.0	8.2	16.8	13.4	251
TOOTSIE ROLL INDS	20.1	18.8	18.8	19.2	18.0	16.8	15.7	16.1	18.3	18.0	348
UNIVERSAL FOODS CORP	21.0	22.1	21.6	14.0	18.6	16.1	19.2	12.4	17.7	18.1	278
VF CORP	18.4	9.4	17.8	22.2	18.0	16.5	8.8	15.8	18.0	16.1	210
WESTVACO CORP	15.9	12.1	8.3	7.8	3.1	5.6	14.4	9.9	7.3	9.4	131
Median	17.9	15.7	15.7	15.2	17.0	16.3	17.3	16.5	17.7	16.2	252
Average										16.1	269
Average of Medians										16.6	263

Source: Standard & Poor's Compustat Services, Inc.

35INDROE

EARNINGS TO REPRICED EQUITY RATIOS FOR
35 LOW RISK INDUSTRIALS

Company	1989	1990	1991	1992	1993	1994	1995	1996	1997	Average 1989-1997
AIR PRODUCTS & CHEMICALS INC	9.7	8.8	8.6	8.6	5.9	6.6	9.7	10.3	10.1	8.7
ALBERTO-CULVER CO	11.2	10.9	7.9	9.2	9.0	9.0	9.8	10.5	12.7	10.0
ALBERTSONS INC	16.7	17.0	16.5	15.6	17.8	19.8	19.1	17.8	16.9	17.5
AMP INC	11.8	11.0	9.1	9.6	9.3	10.7	11.0	6.8	10.4	10.0
BECTON DICKINSON & CO	9.2	9.4	8.7	8.3	8.3	8.9	9.8	11.2	11.6	9.5
BRIGGS & STRATTON	-3.3	5.7	5.6	7.4	9.3	12.5	12.0	9.8	6.7	7.3
COMMERCIAL METALS	9.2	7.6	3.3	3.3	5.4	6.1	8.1	8.7	6.8	6.5
CONAGRA INC	18.0	16.5	14.5	14.1	15.5	15.9	5.9	19.9	18.4	15.4
DELUXE CORP	17.4	17.8	17.1	17.2	11.5	11.2	7.4	5.2	3.7	12.1
DEXTER CORP	8.3	7.5	-1.2	6.5	5.7	6.0	6.0	7.0	7.9	6.0
EATON CORP	7.6	5.9	2.1	4.6	5.9	9.5	9.9	8.0	10.4	7.1
ECOLAB INC	0.4	6.9	8.0	9.6	10.5	10.6	11.5	12.5	13.8	9.3
FEDERAL SIGNAL CORP	10.9	11.9	11.8	12.0	12.7	13.7	13.8	15.2	13.4	12.8
GENERAL DYNAMICS CORP	8.3	-18.4	10.5	6.4	7.6	6.6	6.8	6.9	7.6	4.7
HERSHEY FOODS CORP	9.9	11.3	10.5	10.6	12.5	7.6	12.1	12.3	15.6	11.4
HILLENBRAND INDUSTRIES	13.0	11.8	12.6	13.4	15.0	9.1	8.5	12.4	12.9	12.1
HORMEL FOODS CORP	8.9	8.9	9.0	9.0	9.3	10.6	9.8	6.1	8.0	8.8
JOHNSON CONTROLS INC	7.1	5.7	5.5	6.7	7.3	8.6	9.4	10.4	8.9	7.7
KNIGHT-RIDDER INC	10.8	8.4	6.7	6.7	6.5	7.3	7.2	11.4	15.2	8.9
LEE ENTERPRISES	14.2	13.6	9.4	10.6	10.5	12.1	12.3	10.2	11.6	11.6
LITTON INDUSTRIES INC	5.4	5.1	1.8	4.7	2.1	1.3	3.9	4.1	4.2	3.6
LUBRIZOL CORP	7.5	14.1	8.4	8.0	5.4	10.9	8.9	9.8	8.8	9.1
MCCLATCHY CO	11.7	8.1	6.5	7.6	7.4	9.6	6.3	7.7	10.8	8.4
OLIN CORP	5.2	3.1	-0.7	1.5	-4.2	2.8	4.6	9.1	4.9	2.9
PEPSICO INC	16.5	16.6	14.1	15.9	18.1	18.3	15.3	10.9	14.1	15.5
SARA LEE CORP	12.5	11.7	11.8	15.0	12.3	3.6	13.0	13.5	14.3	12.0
SHERWIN-WILLIAMS CO	8.2	8.4	7.9	8.3	8.8	9.4	9.4	9.8	10.1	8.9
SONOCO PRODUCTS CO	13.1	5.9	10.4	8.4	11.5	11.1	13.2	12.8	0.0	9.6
SUPERVALU INC	12.8	11.9	14.5	10.5	10.8	2.4	9.2	9.2	12.0	10.4
TECUMSEH PRODUCTS CO	7.1	1.1	3.2	3.9	6.0	8.2	7.5	6.6	5.6	5.5
THOMAS & BETTS CORP	9.7	8.1	7.6	7.1	6.9	0.2	8.6	5.4	11.7	7.3
TOOTSIE ROLL INDS	12.7	12.2	12.4	12.9	12.5	11.8	11.3	11.8	13.5	12.3
UNIVERSAL FOODS CORP	13.4	14.3	14.3	9.3	12.2	10.4	12.5	8.0	11.3	11.8
VF CORP	12.6	5.8	10.9	14.1	12.2	11.6	6.1	11.0	12.5	10.8
WESTVACO CORP	9.0	6.9	4.6	4.3	1.7	3.0	7.8	5.5	4.0	5.2
Median	9.9	8.8	8.7	8.6	9.3	9.4	9.4	9.8	10.8	9.3
Average	10.2	8.9	8.7	9.2	9.1	9.1	9.7	9.9	10.3	9.4
Average of Medians										9.4

Source: Standard & Poor's Compustat Services, Inc.

HISTORIC MARKET EQUITY RISK PREMIUMS
(Percentages)

	Annual Average Returns		Risk Premium in Relation to:
	S & P 500 Common Stock Index	Long-Term U.S. Treasury Bonds	S & P 500 Common Stock Index
1926-1997	13.2	5.7	7.5
1947-1997	14.4	6.1	8.3

	Annual Average Returns		Risk Premium in Relation to:
	Moody's Gas Distribution Stock Index	Long-Term U.S. Treasury Bonds	Moody's Gas Distribution Stock Index
1947-1997	12.5	6.1	6.4

Source: Stocks, Bonds, Bills and Inflation: 1998 Yearbook, Ibbotson Associates; Moody's Public Utility Manual.

IS97

**S & P 500 CALCULATED DCF COSTS,
CORRESPONDING LONG TREASURY YIELDS
AND RISK PREMIUMS
(QUARTERLY)**

	S & P 500				
	IBES 5-Year EPS Growth Forecast	Dividend Yield	DCF Cost	Long Treasury Bond Yield	Risk Premium
1989 1Q	11.0 %	3.4 %	14.8 %	9.0 %	5.8 %
2Q	11.1	4.0	15.6	8.7	6.8
3Q	11.3	3.5	15.1	8.1	7.0
4Q	11.5	3.5	15.3	7.9	7.4
1990 1Q	11.5	3.2	15.1	8.4	6.6
2Q	11.7	3.6	15.7	8.7	7.1
3Q	11.9	3.7	16.0	8.8	7.2
4Q	11.7	3.8	15.9	8.5	7.4
1991 1Q	11.8	3.0	15.2	8.2	7.0
2Q	11.9	3.5	15.7	8.3	7.4
3Q	11.9	3.1	15.4	8.2	7.2
4Q	11.9	3.0	15.4	7.9	7.5
1992 1Q	12.1	2.9	15.3	7.8	7.5
2Q	12.0	3.2	15.6	7.9	7.7
3Q	12.0	3.0	15.4	7.4	7.9
4Q	12.0	2.8	15.1	7.5	7.6
1993 1Q	11.8	2.8	14.9	7.0	8.0
2Q	11.5	2.9	14.7	6.9	7.9
3Q	11.3	2.9	14.5	6.3	8.2
4Q	11.3	2.6	14.1	6.2	7.9
1994 1Q	11.4	2.7	14.3	6.7	7.6
2Q	11.5	3.0	14.9	7.3	7.5
3Q	11.6	2.8	14.7	7.6	7.2
4Q	11.6	2.8	14.7	7.9	6.8
1995 1Q	11.5	2.6	14.4	7.6	6.8
2Q	11.6	2.7	14.7	6.9	7.7
3Q	11.9	2.4	14.6	6.7	7.9
4Q	12.0	2.3	14.6	6.2	8.4
1996 1Q	11.9	2.2	14.4	6.4	8.0
2Q	12.3	2.2	14.8	7.0	7.9
3Q	12.5	2.4	15.2	7.0	8.2
4Q	12.8	2.0	15.1	6.6	8.5
1997 1Q	13.0	1.8	15.0	6.9	8.1
2Q	13.3	1.8	15.3	6.9	8.4
3Q	13.7	1.6	15.5	6.5	9.1
4Q	13.6	1.6	15.4	6.1	9.3
1998 1Q	13.7	1.4	15.4	5.9	9.4
2Q	14.0	1.4	15.6	5.9	9.8
3Q	14.4	1.6	16.2	5.3	10.9
4Q	14.6	1.3	16.1	5.2	11.0
Average	12.2	2.7	15.2	7.3	7.9

Source: I/B/E/S, Inc., Standard & Poor's Compustat Services, Inc.

SPMRP

DIVIDEND YIELDS AND IBES GROWTH RATE FORECASTS
FOR 13 SELECTED LOCAL NATURAL GAS DISTRIBUTION COMPANIES

Company	Dividend Yield For 3 mos ending Jan 1999	IBES EPS Growth Forecast For Jan 1999
AGL RESOURCES INC	5.0 %	5.0 %
ATMOS ENERGY CORP	3.6	9.0
CASCADE NATURAL GAS CORP	5.5	3.4
CONNECTICUT ENERGY CORP	4.7	6.2
INDIANA ENERGY INC	4.0	6.5
KEYSPAN ENERGY	6.1	8.0
NEW JERSEY RESOURCES	4.4	6.0
NICOR INC	3.6	5.5
NORTHWEST NATURAL GAS CO	4.7	5.0
PEOPLES ENERGY CORP	5.2	4.0
PIEDMONT NATURAL GAS CO	3.8	6.5
SOUTHWEST GAS CORP	3.2	4.6
WASHINGTON GAS LIGHT CO	4.7	5.0
Average	4.5	5.7
Median	4.7	5.5

Source: Standard & Poor's Compustat Services, Inc., I/B/E/S Inc.

19GDDCF

RELATIONSHIP OF DIVIDEND YIELDS FOR
13 SELECTED LOCAL NATURAL GAS DISTRIBUTION COMPANIES
TO U.S. LONG TREASURY YIELDS

	Average Annual Dividend Yields For LDCs	Average Annual U.S. Long Treasury Yields	Dividend Yield/ Treasury Yield	DCF	Risk Premium
1992-1Q	6.1 %	7.8 %	78.5 %	11.4 %	3.6 %
2Q	6.0	7.9	76.5	11.0	3.1
3Q	5.5	7.4	74.4	11.0	3.5
4Q	5.7	7.5	75.1	12.7	5.1
1993-1Q	5.3	7.0	75.2	12.0	5.0
2Q	5.1	6.9	74.2	11.9	5.0
3Q	4.8	6.3	77.0	11.3	5.0
4Q	5.0	6.2	81.0	10.8	4.6
1994-1Q	5.2	6.7	77.0	10.6	3.9
2Q	5.7	7.3	78.2	11.5	4.2
3Q	5.7	7.6	75.5	11.4	3.9
4Q	6.1	7.9	76.4	11.3	3.4
1995-1Q	5.8	7.6	75.8	10.9	3.3
2Q	5.8	6.9	83.3	10.6	3.7
3Q	5.7	6.7	84.3	10.3	3.6
4Q	5.3	6.2	86.0	10.2	4.1
1996-1Q	5.2	6.4	81.9	10.2	3.8
2Q	5.3	7.0	76.6	10.2	3.3
3Q	5.3	7.0	75.6	10.2	3.2
4Q	4.9	6.6	74.1	10.1	3.5
1997-1Q	5.1	6.9	74.0	9.9	3.0
2Q	5.0	6.9	72.2	10.2	3.3
3Q	4.8	6.5	73.7	10.0	3.6
4Q	4.4	6.1	71.8	10.2	4.1
1998-1Q	4.4	5.9	73.7	10.3	4.4
2Q	4.4	5.8	76.2	10.4	4.5
3Q	4.6	5.3	86.5	11.0	5.7
4Q	4.4	5.2	84.5	10.2	5.1
Jan 1999	5.0	5.1	97.1	10.6	5.5
Average	5.2	6.8	77.5	10.8	4.0

Source: Standard & Poor's Compustat Services, Inc., Federal Reserve Statistical Release.

19GDDYBY

VALUE LINE RETURN ON EQUITY FORECASTS
FOR SELECTED LOCAL NATURAL GAS DISTRIBUTION COMPANIES

Company	ROE Forecast For 2001-2003
AGL RESOURCES INC	12.0 %
ATMOS ENERGY CORP	16.0
CASCADE NATURAL GAS CORP	12.0
CONNECTICUT ENERGY CORP	12.0
INDIANA ENERGY INC	14.5
KEYSPAN ENERGY CORP	12.0
NEW JERSEY RESOURCES	14.5
NICOR INC	17.5
NORTHWEST NATURAL GAS CO	11.5
PEOPLES ENERGY CORP	13.5
PIEDMONT NATURAL GAS CO	13.5
SOUTHWEST GAS CORP	8.5
WASHINGTON GAS LIGHT CO	13.0
Average	13.1

Source: Value Line

19VLROE

1997 REPRICED EQUITY/BOOK VALUE RATIOS AND MARKET/BOOK RATIOS FOR 13 SELECTED NATURAL GAS DISTRIBUTION COMPANIES

Company	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Repriced Equity/ Book Value 1997
AGL RESOURCES INC	155	163	176	188	192	170	170	186	177	171	149
ATMOS ENERGY CORP	129	130	143	160	180	190	186	204	221	230	113
CASCADE NATURAL GAS CORP	144	149	162	176	174	163	157	162	163	164	155
CONNECTICUT ENERGY CORP	133	142	146	163	180	167	140	131	144	156	155
INDIANA ENERGY INC	146	152	161	186	198	184	170	180	207	231	154
KEYSPAN ENERGY CORP	137	141	140	148	160	159	149	149	164	178	149
NEW JERSEY RESOURCES	150	140	145	155	185	178	162	181	197	213	145
NICOR INC	183	198	187	190	205	193	187	223	258	274	222
NORTHWEST NATURAL GAS CO	131	137	146	154	164	159	148	154	175	178	156
PEOPLES ENERGY CORP	130	138	146	165	176	160	146	162	180	178	261
PIEDMONT NATURAL GAS CO	154	156	154	175	213	204	178	183	195	259	138
SOUTHWEST GAS CORP	103	87	71	76	92	93	104	128	134	161	159
WASHINGTON GAS LIGHT CO	135	145	155	173	194	180	161	169	181	195	160
Median	137	142	146	165	180	170	161	169	180	178	155

Average of Medians 1989-1997 161
Average of Medians 1990-1998 166

Source: Standard & Poor's Compustat Services, Inc.

19MB

Schedule 16

DERIVATION OF IMPLICIT RELATIONSHIP AMONG COST OF CAPITAL, RETURN ON BOOK EQUITY AND MARKET/BOOK RATIO

Assume the following:

k = the equity capitalization rate
D = dividend per share
E = earnings per share
M = current market price
B = current book value per share
b = retention rate
r = return on book equity
RE = per-share retained earnings
g = sustainable growth as measured by b(r)

DCF cost of capital:

$$(1)\quad k = \frac{D}{M} + g$$

Price of stock:

$$(2)\quad M = \frac{D}{k - g}$$

From the definition of return on book equity:

$$(3)\quad r = \frac{E}{B} = \frac{D}{B} + \frac{RE}{B}$$

If, from the assumptions,

$$(4)\quad g = br,$$

(5) by definition, $$g = \frac{RE}{E} \times \frac{E}{B} = \frac{RE}{B}$$

Substitute Equation (5) into Equation (3):

$$(6)\quad r = \frac{D}{B} + g$$

Solve for Equation (6) for B:

$$(7)\quad B = \frac{D}{r - g}$$

Divide Equation (2) by Equation (7) to obtain an expression of the market/book ratio:

$$(8)\quad M/B = \frac{\frac{D}{k - g}}{\frac{D}{r - g}} = \frac{r - g}{k - g}$$

From the formulation of g = b(r) in Equation (4):

$$(9)\quad M/B = \frac{r - [b(r)]}{k - (b)(r)} = \frac{(1 - b)r}{k - br}$$

Solve Equation (9) for r:

$$(10)\quad r = \frac{M/B \times k}{1 + b\left(\frac{M}{B} - 1\right)}$$